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THE INSURANCE CYCLOPÆDIA:

BEING
A DICTIONARY

OF THE DEFINITION OF TERMS USED IN CONNEXION WITH THE THEORY
AND PRACTICE OF INSURANCE IN ALL ITS BRANCHES:

A BIOGRAPHICAL SUMMARY
OF THE LIVES OF ALL THOSE WHO HAVE CONTRIBUTED TO THE
DEVELOPMENT AND IMPROVEMENT OF THE THEORY AND PRACTICE
OF INSURANCE: WHETHER AS AUTHOR, MANAGER, ACTUARY,
SECRETARY, AGENCY SUPERINTENDENT, OR OTHERWISE.

A BIBLIOGRAPHICAL REPERTORY
OF ALL WORKS WRITTEN UPON THE SUBJECT OF INSURANCE AND ITS
ASSOCIATED SCIENCES:

AN HISTORICAL TREASURY
OF EVENTS AND CIRCUMSTANCES CONNECTED WITH THE ORIGIN AND
PROGRESS OF INSURANCE, INCLUDING A HISTORY OF ALL KNOWN
OFFICES OF INSURANCE FOUNDED IN GREAT BRITAIN,
FROM THE BEGINNING.

AND ALSO CONTAINING A DETAILED
ACCOUNT OF THE RISE AND PROGRESS OF INSURANCE
IN EUROPE AND IN AMERICA.

AND A
COMPENDIUM OF VITAL STATISTICS.

BY
CORNELIUS WOLFORD, F.I.A., F.S.S.,
BARRISTER-AT-LAW;

AUTHOR OF "INSURANCE GUIDE AND HAND-BOOK," "INSURANCE YEAR-BOOK," ETC. ETC.

VOLUME VI.

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LONDON:
CHARLES AND EDWIN LAYTON, FLEET STREET.
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TABLE OF ABBREVIATIONS USED IN THIS WORK;

MANY OF WHICH ARE SPECIALLY ADAPTED TO ITS PAGES :—

A.	Accident Insurance	Int.	Interest
Act.	Actuary	Intro.	Introduction
Act of Parl.	Act of Parliament		
Add.	Addition, additional		
Adv.	Advertisement		
Amalg.	Amalgamation	L.	Life, Life Insurance
Ann.	Annual, annum	L.J.	Lord Justice
Ann.rep.	Annual report	Lim.	Limited
Annu.	Annuities, annuity, annuitant	Liq.	Liquidator, liquidation, liquidated
Ap.	Apprenticeship Insurance	Lond.	London
Art. of Asso.	Articles of Association		
Art. of Sett.	Articles of Settlement		
Assu.	Assure, assured, assurance, assurances	M.	Marine, Marine Insurance
Assu. Mag.	Assurance Magazine	Mag.	Magazine
Asso.	Association	Man.	Manager
		Mar. Ins.	Marriage Insurance
		Mort.	Mortality
		Mort. obs.	Mortality observations
		Mut.	Mutual
B.	Birth Insurance		
B. of mort.	Bill of mortality	N. Y.	New York
Bal.	Balance	Non-par.	Non-participating
Bon.	Bonus, bonuses		
Brit.	Britain, British, Britannia		
Bus.	Business		
		Obs.	Observations
C.	Christening Insurance	Off. Liq.	Official Liquidator
C.	Cent.	Off. Man.	Official Manager
C.p.c.	Cent. per cent.	Ordin.	Ordinance
Cap.	Capital	Orig.	Original
Chap.	Chapter		
Co., Cos.	Company, companies	P.a.	Per annum
Comp. regis.	Complete registration	P.c.	Per cent.
Con. Act.	Consulting Actuary	Pamph.	Pamphlet
Consti.	Constitution	Para.	Paragraph
Contin.	Contingencies	Parl.	Parliament
Corp.	Corporation	Parl. Com.	Parliamentary Committee
		Parti.	Participation
D. of Sett.	Deed of Settlement	Phil. Trans.	Philosophical Transactions.
Def.	Defendant	Plt.	Plaintiff
Div.	Dividend, dividends, division	Pol.	Policy, policies
Dol.	Dollar	Pop.	Population
		Prelim.	Preliminary
Ed.	Edition, editor	Prem.	Premium, premiums
Eds.	Editions	Prob.	Probability, probabilities
Edin.	Edinburgh	Prosp.	Prospectus
Ency. Brit.	Encyclopædia Britannica	Prov. regis.	Provisional registration
Endow.	Endowment, endowments	Pub.	Published, publisher, publication
E. and W.	England and Wales		
Equiv.	Equivalent	R.	Report
Estab.	Established, establishment	Red. prem.	Reduction of premium
Exp.	Experience	Reg.-Gen.	Registrar-General
Expec.	Expectation	Regis.	Registration, Registrar, Registry
		Rep.	Report
		Rev.	Reversion
F.	Fire, Fire Insurance		
F. So.	Friendly Society	S.	Service Insurance
Fid.	Fidelity guarantee	Sec.	Secretary
Fr.	France	So.	Society
		Stat.	Statute
G.	Guarantee Insurance	Stg.	Sterling
Gl.	Glass Insurance	Subs.	Subscribed, subscribers, subscription
Gov.	Government		
Gt. Brit.	Great Britain	T.	Table
Guar.	Guarantee	Trans.	Transfer, transferred, translation
H.	Hail Insurance	U. K.	United Kingdom
Hist.	History	U. S.	United States
Incorp.	Incorporation	V. C.	Vice Chancellor
Ins.	Insure, insured, insurance, insurances	V. Sta.	Vital Statistics
Inst.	Institution, institutions	Vict.	Victoria

EXPLANATION TO THE READER.

The design of this work is that it shall be, as far as possible, self-interpreting. All technical terms used in its pages are explained in its pages, in their alphabetical order.

The arrangement of subjects is strictly *Alphabetical*.

The arrangement of articles is, as far as possible, *Chronological*. Dates are given whenever possible. Writers on Insurance subjects generally have a great disregard for chronological exactitude.

Words in Small Capitals placed in brackets, as [USURY], mean that the subject will be further treated of under that head.

When Small Capitals are used in the text without the brackets, it signifies that the subject is, or will be, treated as a separate article.

Offices founded in London or books published there, are not individually so designated in the following pages. The rule we have followed is to state all the exceptions. Therefore, where it is not specifically stated *otherwise*, London is to be assumed.

We are especially desirous of noticing all INSURANCE PAMPHLETS. Many of these are privately printed, or only accessible through their authors. Our thanks will be due for any contributions of this description.

A Table of the principal Abbreviations used in the work is given on the preceding page.

T H E

ENCYCLOPÆDIA OF INSURANCE.

HAND AND HEART SO., East Harding St.—Estab. 1710, for Birth and Marriage Ins., by means of fixed weekly contributions; the benefits to be received being also fixed. Details will be given under **MARRIAGE INS.**

HAND AND SUN FIRE OFFICE.—Under this title a new Ins. Office was projected in Lond. in 1720. It was said in the first announcement of it to be promoted by a member of the Sun Fire Office “for good reasons”; and under the hist. of that Office we shall give more details. It will be observed that its title was composed of a partial union of the names of the two then most important Fire Offices. [POVEY, CHARLES.] [SUN FIRE OFFICE.]

HANDCOCK, ELIAS ROBINSON.—Sec. of *Royal Exchange Assu. Corp.* since 1875. Mr. Handcock entered the office as a junior in 1857, and passed through the various departments, until in 1861 he was appointed Assistant Sec. We believe he was the first officer of the Corp. who ever made any systematic visit to its provincial agents.

HANDCOCK, ROBERT.—Was Actuary of *Leeds and Yorkshire Ins. Co.* from 1854 down to its amalg. in 1864.

HANDLEY, FRANCIS.—Was Man. Director of *Industrial Fire*, founded 1875.

HAND-PUMPS.—The idea of Hand-pumps was taken from the old-fashioned squirt, or hand-engine. Improvements have been made in them of late years.

In 1707 it was enacted that each parish within the Bills of Mort. should keep a hand-engine, as well as a large engine.

For many years a hand-pump has been carried with each fire engine of the London Brigade. They have been found of the greatest service in keeping doors, windows, etc., cool. They throw from six to eight gallons per minute to a height of from 30 to 40 feet, and can be used in any position.

Mr. Braidwood always said the main rule to be observed in the early stages of a fire was to get as nearly as possible to its source, “so that the water may strike the burning materials.” The hand-pump enables this to be done in many cases very readily. In all hotels and large public buildings one should be kept constantly charged.

It is stated on the authority of Mr. C. F. T. Young that while the great fire was raging in Tooley Street in 1861, and all the most powerful engines in London were playing upon it with very little effect, that Beale’s Wharf was saved, and the progress of the flames eastward from that conflagration was stayed by a hand-pump!

Many fires have been, and many more will be, arrested in their first stages by such simple and ready means. The hydropult appears to be one of the most convenient forms of hand-pump. [FIRE ENGINES, HAND.]

HANDS OF JUSTICE, DEATH BY.—It has been a condition of the contract of Life Ins. from the very beginning that persons dying by the hands of justice forfeit all rights under such contracts, although the actual judicial reasons assigned for such forfeiture have been the subject of some conflict, as will be seen in what follows. See later as to *assigned pol.*

In *Accident Ins.* there is a like exemption in the contract.

1669.—The art. of the *So. of Assu. for Widows and Orphans*, founded this year, and which was the first Life Asso. of which we have any knowledge, contained the following:

17. That if any subscriber to this So. shall commit any crime whereby he shall be sentenced and put to death, the widow or orphan, or orphans, person or persons mention’d in the pol. delivered to the said subscribers, shall have no right or title to claim the contribution of this So.; and all sums before that time paid or contributed by the said subs. shall be forfeited. . . .

The pol. of nearly all subsequent Life Offices have contained a like condition; but even where there has been no such condition, the pol. in such cases is held to be void under the common law. See 1830.

1716.—The art. of the *Generous So. of Ins.* founded this year, contained the following: xvii. That no claim shall be allow’d upon any person that shall be convict, or suffer

for any treason, felony, burglary, or other capital crimes, or shall die other than a natural death.

1827.—In the remarkable case of *Bolland v. Disney*, which came before the English Court of Chancery this year, the following were the facts: A pol. had been issued by the *Amicable* So. on 11 January, 1815, on the life of Henry Fauntleroy, and the So. bound itself to pay on his death such a proportion of the funds as would become due under the pol. according to the So.'s Charter and Bye-laws. In Oct. 1824, Fauntleroy was declared a bankrupt: shortly after, he was convicted of forgery, and on 30 March he was executed according to his sentence. The prems. had been duly paid up to the time of his death. The conditions of the pol. contained an enumeration of certain circumstances under which the pol. should be void. Death by the hands of justice was not one of these. The case came before the Court on a bill filed by the assignees of Fauntleroy, praying that an assignment of the pol. which had been made in 1819 might be declared void, and that the *Amicable* might be decreed to pay to the plaintiffs what was due on the Ins. The only question argued was between the plaintiffs and the *Amicable* So., who contended that because Fauntleroy had perished by the hands of justice, no person could make any claim against them under the pol. of ins. The counsel for the So. argued that the nature of the ins. was a species of indemnity against the chance of death, as depending upon the course of nature and the accidents of life; but that it was not the purpose of the contract to indemnify the ins. against his own act; and if he by his personal agency terminates his existence, he cannot make the So. liable. Again, that the members of a co-partnership are bound by an implied faith arising out of the partnership relation. A partner is not at liberty to do an act which shall withdraw funds from the partnership and convert them into part of his own assets. Finally, that at all events the question was one of a nature purely legal, and decision ought not to be pronounced against the So. without giving them an opportunity of obtaining the opinion of a common law tribunal. The Master of the Rolls said: Where the pol. does not provide that the obligation to pay shall determine, if the event insured against shall happen in a certain specified manner, then, if the event do happen in that manner, the obligation to pay shall not determine merely because the conduct of the party ins. produced the event—even though such conduct was an offence against the criminal law of the country. To avoid the obligation to pay, the act of the party ins. which produced the event must be done fraudulently, *for the very purpose of producing the event.* Decree for plts. (3 Russell, 351.)

1830.—The decision last quoted was, however, reversed in the case of *Amicable So. v. Bolland*, before the House of Lords this year—the ruling being: If a person having an ins. upon his life commit a felony for which he is tried and executed, the pol. is rendered void, *though it contain no condition to this effect.* Lord Chancellor Lyndhurst, in giving the decision in this House of Lords case, said:

The question under these circumstances is this: whether the assignees can recover against the Ins. Co. the amount of this ins.; that is to say, whether a party effecting with an Ins. Co. an ins. upon his life, and afterwards committing a capital felony, being tried, convicted, and finally executed—whether under such circumstances the parties representing him, and claiming under him, can recover the sum insured in the pol. so effected. . . . Suppose that in the pol. itself this risk had been insured against; that is, that the party insuring had agreed to pay a sum of money year by year upon condition that in the event of his committing a capital felony, and being tried, convicted and executed for that felony, his assignees shall receive a certain sum of money—is it possible that such a contract would be sustained? Is it not void upon the plainest principles of public policy? Would not such a contract, if available, take away one of those restraints operating on the minds of men against the commission of crimes? namely, the interest we have in the welfare and prosperity of our connexions. Now if a pol. of that description, with such a form of condition inserted in it in express terms, cannot, on grounds of public policy, be sustained, how is it to be contended that in a pol. expressed in such terms as the present, and after the events which have happened, can we sustain such a claim? Can we, in considering this pol., give to it the effect of that insertion, which, if expressed in terms, would have rendered the pol., as far as that condition went, at least altogether void?

1842.—In the English case of *Borradaile v. Hunter*, before the Courts this year, C. J. Tindal pointed out that “the dying by the hands of justice is the dying in consequence of a felony previously committed by him”; and the reporter of the case raises, in a note, the following point: “Suppose the attainer to be reversed upon error brought by the heir or executor of the party executed, the party would still have died by the hands of justice; but it would hardly be contended that through this wrongful act, *in invitissimum*, his family were also to be deprived of the benefit of a contract entered into by him for their behoof.”

Mr. Bunyon [*Law of Life Assu.* p. 80], reviewing the preceding, says: “The cases also may be suggested of an execution after a reprieve, or by the mistake of the Sheriff, who supposes the assured to be another person, who is actually under sentence of death.” But in practice no such difficulties have arisen.

1846.—In the English case of *Clift v. Schwabe*, where the real question at issue was that of suicide, Mr. Justice Patteson, in his judgment, remarked as follows:

. . . I apprehend that the actual felony is no part of the cause of exception from liability. If it were, it would be competent to the plt. to prove that the deceased, though dying by the hands of justice, was in truth innocent of the crime for which he suffered; in the same manner as it is no doubt competent to an executor to traverse an inquest of *felo de se*, found upon view of the body of his testator, by a coroner's jury; or that the deceased, although killed in a duel, had fired his pistol in the air, and never contemplated shooting at his opponent. Such defences would surely be excluded;

for the words of the exception are express, "die by the hands of justice," whether justly or not, "or by duelling," whether it were felony or not. *It seems, in truth, that the exception is not framed with reference to the commission of any felony or crime, but to guard against the time for payment of the sum insured being accelerated by the voluntary act of the party interested in the money.*

1853.—There arose in the U.S. Courts this year the case of *Spruill v. North Carolina Mutual Life*, wherein the circumstances are unique. The pol. was upon the life of a slave, and contained a provision that "in case the said slave shall die by means of any invasion, insurrection, riot, or civil commotion, or of any military or usurped authority, or by the hands of justice, this pol. shall be void, null, and of no effect." The slave having been killed in an attempt made to arrest him as a runaway, it was held (reversing the decision of the Court below), that the Ins. Co. was liable under its contract. The Court said: "The death of the slave Harry does not come within any of the exceptions contained in this pol. It is not pretended that his death was occasioned either from the want of proper medical aid, or by an invasion of the country." After giving definitions from dictionaries of the terms used, the Court continued: "Let us now test the case by the definition above stated. The slave Harry was owned by the plt., and was at the time of his death a runaway. The individual who shot him was one of the regular patrol, who were then engaged in discharging their proper duty, in their proper district; and finding the slave there, they endeavoured to apprehend him, as it was their duty to do, and in the attempt made by him to escape he was killed. Here was no seditious rising against the Gov., nor was there any riot. The patrol was there for a lawful purpose; there was no tumult, nor any military or usurped power; nor did Harry die by any judicial judgment or proceedings. The plt.'s case is not within any of the exceptions or conditions of his pol. We cannot adopt the ingenious suggestion of the defts. counsel that the defts. intended to insure against what is called a natural death, as distinguished from a violent death. It is sufficient to say such is not the contract." (*Life and Accident Ins. Rep.* vol. i. p. 624.)

In later times it has come to be the practice to waive the forfeiture clauses in the case of *bona fide* assigned life pol. When such a concession was first made, we cannot determine with precision. [LIFE INS. PRACTICE.]

In *Accident* pol., no assignments being recognized, the question of a like concession cannot arise.

[DUELLING.] [FELO DE SE.] [FORFEITURE OF INS. POL.] [INSANITY.] [SUICIDE.] [UNLAWFUL ACTS OF INSURED.] [VOLUNTARY EXPOSURE.]

HANGING, DEATHS FROM (Class, *Violent Deaths*; Orders (4) *Suicide*, (5) *Execution*.—The deaths registered under this head in E. & W. range under two categories—(1) from hanging adopted as a means of suicide; (2) by hanging under sentence of execution. These last are spoken of under EXECUTIONS. In 10 consecutive years the deaths by hanging in the Order of Suicides were as follows: 1858, 570; 1859, 540; 1860, 569; 1861, 592; 1862, 611; 1863, 562; 1864, 564; 1865, 591; 1866, 522; 1867, 488; showing a variation from 30 p. million of the pop. in 1858 and 1860, 1861, and 1862, to 27 in 1864, and 22 in 1867. [VIOLENT DEATHS.]

HANN, JAMES, "King's College, Lond."—Was Consulting Act. of the *Practicable Invalid and Gen. Life Assu. Co.* projected in 1845.

HANNAM, WM.—Has occupied many positions in connexion with Ins. Asso., and did much, years since, to popularize the bus. In 1853 he was Inspector for *Deposit and General*; in 1854 he held a similar position in the *Hope Mut.* He afterwards became one of the founders of the *Clarence*, and still later of the *Homoeopathic*. He next represented the *Medical Invalid* in the North of England (about 1855) with great success. He was one of the founders of the *Boiler Ins. Co.* (1859); and afterwards represented the *Consolidated Investment Co.* (about 1864). In 1874 he aided in promoting the *Gt. National Fire*.

Among his publications on Ins. topics are the following:

1857.—*Gift to the Uninsured, or Thirty Short Answers to Thirty Common Objections*. This pamph. had a most extraordinary circulation—reaching prob. 750,000.

Also, *Hints to Medical Referees*.

1858.—*Proposition for a Change in the System of working Life Assu. Societies, calculated very considerably to promote their Extension and Usefulness*. [LIFE INS. PRACTICE.]

Also, *Thirty Practical Aids to Life Assu. Agents*.

1860.—*Life Assu. as an Investment*.

HANNAY, ROBERT.—Pub. in Edin. in 1822: *Defence of the Usury Laws, with a Proposal to Lower the Legal Rate of Int.* [INT. OF MONEY.] [USURY.]

HANNYNGTON, MAJOR-GEN., F.I.A., F.S.S.—One of the Actuaries engaged in the India Office. He has published the following practical works:

1867.—*Interest T. for all Rates, and specially applicable to Mutations of Interest and varying Balances*; large 8vo. pp. 76. The plan of arrangement, and purpose contemplated, are original and novel.

1872.—*Table for converting Shillings, Pence, and Farthings, into Decimals of a Pound; and for the Reconversion of Decimals*.

1874.—*Table of Logarithms*, four figures, 1 to 10,000. T. of *Anti-Logarithms*, added in 1880.

In 1865 he contributed to the *Assu. Mag.* [vol. xii. p. 184] a letter: *On the Adaptation of Assu. Formulae to the Arithmometer of M. Thomas.*

In 1879 he contributed to the same publication a letter: *On Mr. Gray's Methods of Constructing Life Tables.*

HANOVER.—Formerly an Electorate, and afterwards a separate kingdom, which, however, became united with Prussia in 1866. Its pop. in 1861 was 1,888,070. In our review of Ins. in GERMANY we have noted most of the points affecting Hanover. The following are supplemental:

1530.—It is recorded that an Ins. Asso. was founded here at this date. This was prob. in the form of a Gild.—See HAMBURG.

1753.—A system of compulsory State Fire Ins. was introduced here at this date, and has continued down to the present time. This was prob. only a reorganization of an earlier scheme.

There was a system of paid Fire Brigades estab. through the kingdom, including Fire Watch. The inhabitants were compelled also to assist under certain regulations—the Royal servants, priests, and medical men being exempt.

HANOVER LIFE INS. CO., MORT. EXPERIENCE OF.—In 1865 Dr. Theodor Wittstein, Act. of the Hanover Life Ins. Co., prepared a T. of the Mort. Experience of that Co. during a period of 34 years, from 1831-2 to 1864-5. This T. we have already given under GERMAN MORT. T.

HANSA, OR HANSE.—An Asso. or So. formed exclusively for purposes of Trading in the Country and Abroad, *vide Spelman's Glossary*, and *Jacob's Law Dict.* Hence "Hanse-house" [*Hans-hus*] in many of the early towns having had trading Gilds, as Beverley, etc. See GILDS.

HANSE TOWNS, MARITIME LAWS OF [*Jus Hanseaticum Maritimum*].—Towards the close of the 14th century the confederated cities of the Hanseatic League appear to have undertaken the task of composing an uniform body of laws, of which the earlier statutes of Hamburg [1270] and Lubeck [1299]—nearly identical in their terms—constituted the foundation.

1369.—The first Recessus, or Ordin. on Private Maritime Law, enacted by the Congress, prob. dates from this period.

1591.—Between the last date and the present a series of short enactments had been adopted by the Hanseatic Congress. These were now consolidated into an Ordin. [Recessus] of this date, by a general assembly of Deputies of the Hanse Towns, aided by those of other free and maritime towns, assembled at Lubeck for the purpose. This Ordin. is always regarded as of great authority. A French translation of it is given in Cleirac's collection, and is quoted by Mr. Justice Abbott as the Hanseatic Ordin. Benecke quotes the Ordin. of Hamburg, Lubeck and Bremen of 1591, prob. meaning this Code.

1614.—The Recessus of this year was drawn up by the Syndic Domann, who was charged with the task by the Congress of 1608. This is generally cited as the *Jus Maritimum Hanseaticum*. It was printed in German at Hamburg in 1657, by Kuricke, with a Latin translation and commentary; and reprinted in his collection by Heineccius, entitled *Scriptorum de Jure Nautico et Maritimo fasciculus*. The subjects treated are here arranged in a great number of art., classed under 15 titles or chap.; and although fundamentally the same, with a few improvements, is much more clear and succinct than the former compilation.

This Code gives in more complete detail than the Laws of Oleron, the Judgments of Damme and West Capelle [HOLLAND, INS. ORDIN. OF], or the Usages of Amsterdam, or even the Collection of Wisby, the legal and equitable principles which regulate the acquisition and transference of property in vessels absolute and limited; the mutual interest and duties of part and joint owners; the claims and security arising from the repairs and furnishings made alike in home or foreign ports; the reciprocal duties, powers, and rights of the owners, master, mate, pilot, and crew of the vessel, in relation to navigation, storage, and wages; the relative rights and obligations to the contract of affreightment; agreements of reciprocal aid in voyages; the doctrine of damage from collision, of salvage and average, also the practice of Bottomry and Respondentia.

It has here to be remarked (as Mr. Reddie has already pointed out) that although the contract of Bottomry obviously implies an acquaintance with the theory of maritime risks, the contract of *Marine Ins.* is not once alluded to in this Ordin. Yet there is every reason to believe that this contract was well known at this date; certainly in those Cities of the League where commercial intercourse with the Maritime Cities of the Mediterranean was prevalent.

M. Pardessus has advanced the theory, that the hazardous character of the contract of Ins. did not suit the cautious and plodding spirit which guided the legislation of the League; or that its influential leaders may have seen in the transactions of Ins. only a great innovation, of which the advantages were still not sufficiently developed to admit of any attempt to subject them to positive rules, and of which the conditions required in each case to be regulated by special contract. We confess these reasons appear to us altogether insufficient. It has to be remembered that the League owned vessels enough

to justify it in becoming its own insurer, *i.e.* standing upon its own risk, after the manner of many of the great Shipping Cos. of the present day; and further, the League enjoyed a great monopoly of Trade. Now it was the purpose of Marine Ins. to afford such protection to its weaker competitors, as they most required; a consideration which in itself would involve the hostility of the League.

Nor are these latter surmises at all in conflict with the admitted fact that the League, from the time of its formation, had exerted itself with great energy to obtain an abolition of the unjust law which, in almost all the kingdoms of Europe, confiscated shipwrecked goods; and that in some of its Ordin. provisions relative to the aid to be given in cases of shipwreck; relative to the precautions to be taken against pirates; and relative to the recovery of goods captured by the enemy; but no legis. relative to neutrals.—Vide Reddie's *Historical View of Maritime Commerce*, 1841, p. 256.

HANSEATIC LEAGUE.—This is one of the most memorable confederations which has ever arisen in the world's hist. Its precise influence upon the commerce of Europe can of course only be estimated problematically. That it was very vast, first locally and then generally, there can be no doubt—the fact is supported by the united testimony of historians. Before its existence—or perhaps we should more correctly say before the existence of the Asso. out of which it sprang—the maritime commerce of Northern, and we may say Western Europe also, had been pursued without the necessary safeguards, and was subject to the most outrageous incursions of pirates, especially in the North Sea. But the power of the League soon gave to ocean traffic a security it had never before felt, and a growth which the wildest dreams of the originators of the combination had never anticipated.

The influence of the League upon the growth of the trading communities of Europe; of our own capital (London); upon the progress of civilization; upon the production of wealth; upon fostering a proper spirit of independence, through the operation of Trade and other Gilds; and finally upon the bringing into familiar use (not immediately indeed) the contract of Ins.; is made apparent in what precedes and what follows.

This League is supposed to have originated about the year 1241, by the union of Lübeck with its neighbouring cities and towns; and it soon embraced (with the permission of their respective sovereigns) 85 commercial cities, especially those of the North and Baltic Seas. The Laws of Oleron first, and afterwards the Laws of Wisby, constituted their marine code; but in 1591 a special maritime code was promulgated by the Hanse Towns, which was afterwards enlarged, and is noticed under a separate title. This Imperial League flourished for more than three centuries; its objects were to repress piracy, procure restitution of shipwrecked property, facilitate the safe navigation of the seas, and estab. trade, fisheries, commerce, and manufactures. Bruges, in West Flanders, was adopted as one of its leading cities, and soon became, in consequence, the commercial centre of Northern Europe. In 1272 a colony or agency was estab. at Novogorod, Russia, and in 1278 one at Bergen. Norway, Denmark, Sweden, and Germany were subjected to the sway of these merchant princes, who loaned ships of war to kings, and for many years exerted a controlling power over several nations, and almost monopolized with their numerous mercantile marine the commerce of England and of Northern Europe.

About the year 1250 the German merchants of the Teutonic Hanse, or "Easterlings," were encouraged by Henry III. to settle in England, and were granted a patent, erected into a Corporation under the title of "The Steel-Yard Society," and endowed with special privileges, which they retained for more than three centuries, and until the reign of Edward VI., when the national jealousy became excited against them, their privileges were withdrawn, and England began to feel the first throbs of that intense ambition for commercial and manufacturing supremacy which afterwards became so signally successful.

Finally, under Elizabeth, the connexion of England with the League was dissolved by the seizure and confiscation of 60 Hanseatic vessels engaged in smuggling; and the English, who had previously purchased Hanseatic ships built in Baltic ports, commenced learning the art of naval construction, and the building of their own vessels. The Act of Navigation which secured the carrying trade to English shipping was also passed in 1660—12 Charles II. c. 181.

HANSON, JOHN.—Was Sec. of *Royal Farmers* from 1842 down to 1853.

HANTS, SUSSEX, AND DORSET FIRE INS. CO.—Founded at Winchester in 1803, and after carrying on a limited, but respectable bus., was in 1865 trans. to the *Alliance*; its prem. income being then £2395. Its duty return in 1805 was £1312 8s. 2½d. In 1831 it had reached £2833 9s. 7d.; in 1861 it was £2308 4s. 3d.

HARBEN, HENRY.—Resident Director, and Deputy-Chairman, of *Prudential Assu. Co.*, of which he was formerly Sec. and Actuary. Mr. Harben is one of the most prominent men associated with Ins. interests. He was not trained to the bus. of Ins., his early calling having been that of an Auctioneer and Surveyor; but the experience thus gained has been of great service to his Co.; of which he was in 1852 elected Sec., but almost immediately afterwards resigned in favour of Mr. Barfoot, and remained first Accountant, and then Assistant Sec., down to 1856, when, on the resignation of the last-named gentleman, he entered upon the full control of the management. The progress of the

Co. since, is a matter of current hist. Full details will be furnished in our outline of the Co. He retired from the more detailed management of the Co. in 1874.

It may be said of Mr. Harben, that he has lifted the bus. of Industrial Ins. out of the "Slough of Despond," in which it was literally wallowing, before his clear head and great powers of organization were brought to bear upon it. He has made this branch of Ins. what we now find it—envied, yet practically unapproached by continental or more distant nations. *Vide INDUSTRIAL INS.*

The following works have been prepared under his direction :

1867.—*Appendix to the 18th Ann. Rep. of the Prudential Assu. Co., submitted to the Ann. Meeting on the 26th of April, 1867; containing the Experience of the Co. in the Industrial Branch for the three years 1864, 1865, and 1866. Pub. for the Co. at their Offices, 62, Ludgate Hill, London, E.C. Price 7s. 6d.*

1871.—*Mort. Experience of the Prudential Assu. Co. in the Industrial Branch, for the years 1867, 1868, 1869, and 1870; with Obs. by Henry Harben, Sec. to the Co. London, C. & E. Layton, Fleet St.*

1880.—*Hist. of the Prudential Assu. Co., Holborn Bars, London.*

In 1871, Mr. Harben read before the Inst. of Actuaries a paper : *Hist. of Industrial Assu.*, wherein much novel and valuable information was contained, which will be reviewed under INDUSTRIAL INS.

In 1874, Mr. Harben was the recipient—on his retirement from the active management of the Co.—of a splendid testimonial from the District Superintendents and Agents of the Co., in the shape of five handsome pieces of modern sculpture, for the purchase of which over a 1000 guineas had been subscribed. The presentation was made at a dinner given at the Albion Tavern, on 5 March. A full report will be found in *Ins. Record*, 20 March.

In 1880, Mr. Harben was a parliamentary candidate in the Conservative interest for the City of Norwich, and polled 5242 votes. It is unfortunate, from a national point of view, that he was not returned, for never was the want of a clear-headed Ins. man in Parl. more severely felt than now.

HARBOUR.—A general name given to any safe seaport. The qualities requisite in a good harbour are : (1) that it should afford security from the effects of wind and sea ; (2) that the bottom be entirely free from rocks and shallows, but with good holding ground for anchorage, or proper moorings ; (3) that the opening be of sufficient extent to admit the entrance or departure of large ships without difficulty ; (4) that it should have convenience to receive the ships of different nations, especially those which are laden ; (5) that it possess estab. for refitting vessels ; (6) that there be sufficient lights for the guiding of vessels entering at night. Good defences were at one period thought important ; but the great increase of steam-ships is altering some of the former conditions. Such a harbour when associated with a mercantile town becomes a PORT.

HARBOUR DUES.—See PORT-CHARGES.

HARDING, CHARLES.—Man. of *Accident Ins. Co.* (No. 2), since its reorganization in 1870. Was trained to Ins. bus. in the *Western Life*. Became Sec. of the *Western Fire* when it commenced in 1863 ; retired from that Co., and did not resume Ins. bus. until 1868, when he became one of the founders, and afterwards Man. of *General Accident and Guarantee Co.*, now merged in *Accident Co.* (No. 2). He studied actuarial science under Mr. Scratchley.

HARDORPH, HERR.—Pub. in 1689 a Swedish trans. of the *Laws of Wisby*, edited from the ed. printed at Copenhagen in 1505.

HARDWARE MANUFACTORIES AS INS. RISKS.—In February, 1879, Mr. H. L. Weldon, of the *Royal Ins. Co.*, read before the Newcastle-upon-Tyne Ins. Inst. a paper : *Hardware Manufactories*, wherein much valuable information was contained, as will be judged from the opening para. :

The risks embraced under the title of this paper are so varied and numerous that it is not my intention to deal with all, but only to treat of the principal ones. As steel is one of the chief articles used in these risks, I propose, in the first place, to briefly describe the manufacture and chief stages through which it passes prior to its reaching the hands of the consumer.

The injudicious use of water in extinguishing fire is here one of the principal risks to be regarded, from an Ins. point of view.

HARDWICK, CHARLES.—Ed. of *Odd Fellows Quarterly Mag.*, etc., has pub. the following works relating to Friendly Sos., etc. :

1851.—*The Provident Inst. of the Working Classes. F. Sos. : their History, Progress, Prospects, and Utility ; a Lecture delivered at Preston, Bolton, Chorley, London, and Manchester. By Charles Hardwick, Past Provincial Grand Master, and Member of the Board of Directors of the Independent Order of Odd Fellows, Manchester Unity. 2nd ed. same year, Preston.*

1852.—*Friendly Sos. : their Progress, Prospects, and Utility.*

1859.—*The Hist., Present Position, and Social Importance of Friendly Sos. ; including Odd Fellowship and other Affiliated Provident Inst. of the Working Classes. Comprising the Gradual Development of the Science termed " Vital Statistics " ; a Popular Exposition of the Financial Laws necessary to ensure future Stability, and the Method of ascertaining the True Value of the Assets and Liabilities. A Refutation of several Popular Objections ;*

Suggestions for the Equitable Adjustment of Past Error, and for Future Development and Expansion. 2nd ed. 1869, "revised." Manchester.

1863.—*Insolvent Sick and Burial Clubs: the Causes and their Cure; or, How to Choose or Found a Reliable Friendly So. ; with a large illustrative Diagram suitable for suspension in Club-rooms, showing at a Glance the Average Ann. Sickness and the Expect. of Life at various Ages.* Manchester.

HARDWICKE, WILLIAM, M.D., M.R.C.S.—Medical Officer of Health for Paddington; Coroner for Central Middlesex, etc., etc. He has been for many years an earnest worker in the cause of Sanitary Science, as also in the interest of suitable Ins. Asso. and solvent Friendly Sos. for the Industrial Classes.

We are not familiar with all his varied publications and personal efforts in these directions; but we gladly note a few of his printed productions:

1864.—*Life and Health Assu. for the Working Classes: An Answer to the Question how the Government may best acquit Itself in the Production of a Comprehensive Plan of Life Assu. for the Working People of Gt. Britain.* This is a pamph. in which will be found many sound practical remarks, indicating considerable familiarity with the questions discussed.

1865.—A paper read before the Health Department of the Social Science Asso. : *On the Evils of Overcrowding in the Dwellings of the Poor, and Means Suggested for their Removal.*

1867 (?)—*The Sanitary Act of 1866, with Notes and Commentaries on Sanitary Legis. in England.*

1873.—*Paddington: Sanitary Report for 1872-3*, showing much useful work accomplished.

1875.—*Practical Sanitary Hints as to the Best Measures for Preventing the Spread of the "Catching" or Epidemic Diseases, such as Scarlet Fever, Smallpox, Measles, Typhus, etc.* 2nd ed.

1879.—*On the Office and Duties of Coroner, with Suggestions for Parliamentary Inquiry, Proposed Legis. and Reform of the Office.* No. 1. Rep. for the Years 1875, 1876, 1877, and 1878.

1880.—*On the Office and Duties of Coroner. No. 4. Revised Notes and Memoranda for the Consideration of Parl. in Framing a Coroners Reform Bill.*

These two latter were supplemented by various other notes on practical points.

HARDY, G. F., A.I.A. (British Empire).—Joint author, with Mr. Geo. King, of paper read before Inst. of Act. 1880: *Notes on the Practical Application of Mr. Makeham's Formula to the Graduation of Mort. T.* [Assu. Mag. vol. xxii. p. 191]. Mr. Hardy is one of the coming men.

HARDY, JAMES.—Pub. in 1753: *A Complete System of Interest and Annuities, founded upon New, Easy, and Rational Principles; containing the whole Bus. of Int. and Annu. for a Fixed Time, in Perpetuity, or Depending on Single Lives or any number of Joint or Successive Lives either in Possession or Reversion, with a great variety of Questions relating to Fines, Mortgages, Renewals, Church and College Leases, Ins. on Lives, the Mercers Co., Annuityants, etc. To which is prefixed an Introduction and Application of Decimals, etc.: Useful for Landed and Monied Men, Lawyers, Stewards, and all such as have any concern with Annuities.* 12mo. pp. 172.

The questions are wrought out in numbers at length, and the annuities are calculated from the expectation of life severally as given by Halley, De Moivre, and Simpson. Mr. Hardy objects to compound interest, and proposes a plan of his own. [The copy we have contains a MS. note by the late Professor De Morgan, to the effect last stated.]

This is one of the earliest works which makes direct mention of *Life Ins.*

HARDY, JAMES CHARLES, F.I.A.—Founder and Sec. of *Legal and Commercial Life* in 1845; of *Legal and Commercial Fire* in 1847; was founder, and Actuary and Sec. of *National Guardian* (No. 1), 1851; was one of the founders of the *Caxton Life* in 1854, and became its Man. Director, and a promoter of the *English Union* in 1862-3.

In 1850 (?) he pub. : *Thoughts on Life Ins. in Connexion with Benevolent Inst. etc. etc.*

HARDY, PETER, F.R.S., F.I.A.—One of the founders of, and afterwards a Vice-President of the Inst. of Actuaries; a gentleman who lives most pleasantly in the memory of all those who had the advantage of knowing him personally.

Descended from the old and eminent family of Le Hardi, Governors of Jersey, he, on the death of his father—a military officer, who died young—was thrown upon the guardianship of his uncle, Mr. Ralph Price, for many years a Vice-President of the *Equitable Life*, which office the youthful protégé entered in 1829, at the age of 17, and under the tuition of the Morgans (Actuaries of that So.), made rapid advance in the science of Life Contingencies. In 1837 he became Actuary to the *Mutual Life*; in 1839 he was elected a Fellow of the Royal So.—a great honour so early in his career and a high recognition of his mathematical capabilities. In 1850 he was appointed Actuary of *London Assu. Co.*; and in 1863 he died of consumption at the early age of 50.

He was the author of the following works and contributions to Ins. Literature:

1837.—A series of articles in "Saturday Mag." under title of *Popular Illustrations of Life Assu.* These, or some of them, were afterwards reprinted in the *Life Assu. Record*, 1847.

1839.—*The Doctrine of Simple and Compound Int., Annuities and Reversions, Analytically and Practically Explained, with New and Extensive Tables.* [INT. OF MONEY.]

1840.—*A New and General Notation for Life Contingencies.* [NOTATION, MATHEMATICAL.]

1850.—*Methods of Approximation.* This paper was read before the Inst. of Actuaries, 29 April, 1850, and was ordered by the Council to be printed; but as the *Assu. Mag.* was not at that period the organ of the Inst., the paper does not appear in its pages. It was pub. in pamph. form. We shall review its contents under L. CONTINGENCIES.

Same year, before the Inst. of Actuaries, paper: *On the Values of Annu. which are to pay certain given Rates of Int. on the Purchase Money during the whole Term of their Continuance, and to replace their Orig. Values, on their Expiration, at certain other given Rates* [*Assu. Mag.* vol. i. p. 1*].

1851.—Before Inst. of Actuaries a paper: *Some Considerations on the Theories of Combinations, Probabilities and Life Contingencies* [*Assu. Mag.* vol. ii. pp. 151 and 259]. [LIFE CONTINGENCIES.]

He also contributed to the *Assu. Mag.* this year [vol. ii. p. 91], some problems: *On the Value of Contingent Reversions subject to certain Limitations.* [See hereon note by Mr. Sprague, *Assu. Mag.* vol. vii. p. 174.]

1852.—Mr. Hardy was understood to be the author of that exceedingly well-written and effective anon. pamph.: *Life Assu.; its Schemes, its Difficulties, and its Abuses*; than which nothing issued during the entire "Ins. Controversy" period was productive of so much good. "If our well-meant strictures reform a single abuse, or restrain the formation of only one improper scheme, our efforts will not have been altogether mis-directed, nor our labours wholly in vain" (p. 29).

Same year, in the 3rd edition of Willich's *Popular Tables*, etc., there was contained one by Mr. Hardy calculated upon the principle of enabling those "who wish to enjoy a certain high rate of interest on their investments, while from the state of the money market they can only reinvest the surplus income at a low rate of int. in order to replace the cap. expended," to ascertain the present worth of a lease, estate, or annu. at different rates of int. This was the T. included in the second paper of 1850.

1853.—Paper before Inst. of Actuaries: *An Exposé of the Fallacy 'That it is Just to Tax Temporary Annu. at the same Rate as Perpetual Annu.'* [*Assu. Mag.* vol. iii. p. 195].

Same year, he contributed to *Assu. Mag.* [vol. iii. p. 330], in form of a letter: *Approximate Values of Annu. on Three Joint Lives.*

1854.—He contributed to *Assu. Mag.* [vol. iv. p. 381], an orig. T. showing the present Value of £1 p.a. for any Number of Years not exceeding 100, at the following Rates of Int. viz.: from $1\frac{1}{4}$ advancing by eighths to $2\frac{3}{4}$ p.c.

1855.—He contributed to *Assu. Mag.* [vol. v. p. 256]: *Formula for an Approximate Value of Annu. at Simple Int.*

1857.—Paper before Inst. of Actuaries: *An Investigation into the proper Method of Determining the Amount of an Annu. forborne and improved at Int. during the Existence of a given Life* [*Assu. Mag.* vol. vii. p. 1].

1863.—There was pub. as the joint production of Mr. Samuel Brown, Mr. Peter Hardy, and Col. J. T. Smith: *Rep. of the Madras Military Fund, containing new T. of Mort., Marriage, etc., deduced from the 50 Years' Experience, 1808 to 1858, etc., etc.* This we shall review under INDIA.

We have already referred to the fact that Mr. Hardy was one of the founders of the Inst. of Act. in 1848. We may here add that he took an active part in the preliminary discussions and arrangements, and was amongst the most ardent and consistent supporters of what he deemed the liberal and enlightened policy of encouraging the younger members, by examinations, lectures and public discussions, thoroughly to master the theory as well as the practice of Life Contingencies. His speech at the Richmond dinner, on the occasion of the great gathering of European representatives of Life Ins. in 1851, gives evidence of the broadness and liberality of his views, and one passage from it will suffice for our present purposes:

My Lord [Lord Overstone presided], I can conscientiously assure you that our Inst. was not originated in any feeling of professional selfishness. Its founders . . . took no counsel together how to narrow the access to our profession, or how to exclude other competitors than ourselves from a fair share of its honours or emoluments. It was originated with a higher and far nobler motive—in the honest hope of educating the future actuary, of improving among ourselves our present theories, and of enlarging the bounds of that science on which the safety of so many millions sterling depends, and in which the social happiness of so many thousand families is involved. . . . [*Vide Assu. Mag.* vol. i. pp. 383-4]. [INST. OF ACTUARIES, HIST. OF.]

In add. to the permanent professional appointments held by Mr. Hardy, and already referred to, he held the post of Consulting Actuary to, or was consulted by the following offices: *Equitable Reversionary So.; Home and Foreign Mut. Protestant Life; United Kingdom Temperance; Universal Life.* Thus his influence was widely felt in the ranks of Life Ins.

It does not fall within our province in this work to trace the pedigree of personal friendships, or even to chronicle in any detail the evidences of private worth. We will

sum up much that might be said under these heads by three lines from our truly immortal bard :

"His life was gentle; and the elements
So mix'd in him, that nature might stand up
And say to all the world, This was a man!"

HARDY, RALPH PRICE, F.I.A.—Son of the preceding, Actuary of *London and Provincial Law* since 1869. He was trained in the *Eagle*, under that great master, Mr. Charles Jellicoe; and remained in that office until 1868, when he entered the *Mutual Life*, and remained there until he received his present appointment.

He is Consulting Actuary to *United Kingdom Temperance*.

Mr. Hardy has pub. the following works :

1873.—*Valuation T., based upon the "Institute of Actuaries' Mort. Experience (HM) Table," at 3, 3½, 4, and 4½ p.c. : comprising Values of Pol. for all Durations ; Values of Temporary Annu. for all Periods ; Single and Ann. Premis. for Temporary Assu. up to Ten Years ; T. for Valuing Endowment Assu. ; also Values of Pol. on HM(5) Table, at the same Rate of Int. ; with other useful T. Calculated by the Arithmometer invented by M. Thomas (de Colmar).* (181 pp., demy 8vo., 21s., Laytons.) *Vide Assu. Mag.* vol. xviii. p. 376.

1880.—*Tables for Valuing the Assets and Liabilities of Friendly Sos. and Widows and Orphans Funds, based upon Ratcliffe's "Manchester Unity" Experience (1866-70), at 3, 3½, 3¾, 4, and 4½ p.c.* (Laytons.)

In the *Assu. Mag.* (vol. xv. p. 232), 1869, there is a paper : *Solutions of the second year's Examination Questions, 1869 ; with Remarks by the Examiners, Peter Gray, F.R.A.S., and Ralph P. Hardy ;* wherein the rationale of the problems propounded to the students is made pleasantly apparent.

In a useful little work pub. 1867 : *The Railway Service : its Exigencies, Provisions, and Requirements*, the author says in the preface : "And the greatest assistance has been derived from the experienced advice and actuarial assistance of Mr. Ralph P. Hardy."

But the most important service which Mr. Hardy is rendering, not only to this generation, but to the coming ones, is in connexion with Friendly Sos. and Provident Inst. generally. He is a Public Valuer under the Friendly Sos. Act, 1874, and as such the affairs of many of these Sos. are submitted to his scrutiny, and his Reports (printed usually for the use of the members only) are so clear and practical that they enforce conviction in the best possible form, viz. through the reasoning powers of those whose feelings may have previously been adverse ; and hence reform becomes alike speedy and effective.

For several years Mr. Hardy filled the post of Hon. Sec. to the Inst. of Act., gaining the esteem of all who were brought in contact with him in that capacity.

HARDY, THOMAS EDMOND.—Was formerly Superintendent of Agents for the *Western Life*, remaining with that Co. until its amalg. in 1864. He was for a short time with the *New Equitable* ; he then became Supt. of Agents for *Guardian* ; afterwards held a like position with *North British and Mercantile* (Lond. office) ; later represented the *Life Assn. of Scotland* at its West End Branch ; and some years since retired from Ins. altogether.

HARDY, Mr.—Was for some years Sec. of Country Department of the *Phoenix*. He resigned in 1818 in consequence of impaired health.

HARE, F. A. C.—Has held various positions in connexion with Life and other Ins. Asso. in the U.K. and the U.S. ; and is a man of considerable mental activity and personal industry.

In 1870 he pub. *Life Ins. made Easy ; or, the Calculation of Nett Rates explained by simple Arithmetical Demonstration*, 12mo. pp. 122, 2nd ed. "enlarged," 1873. This work is useful to all who are not familiar with algebra, as showing that many of the problems involved in the science of Life Contingencies may be expounded by means of ordinary arithmetic.

In 1879 he prepared for the *Northern Counties of England Fire Office* a most elaborate *Agent's Instruction Book*, calculated to be of the greatest advantage to those who are young in the bus. and not without its uses to the more matured. He also prepared other useful publications for the same mismanaged Co.

HARE, HENRY.—Sec. of *London and County Plate Glass*.

HARFORD, FREDERICK.—Underwriter of the *Ocean Marine* since its estab. in 1859.

HARGREAVE, CHARLES JAMES, LL.D., F.R.S.—Contributed to the *Phil. Mag.* for Jan. 1853, a paper : *On the Valuation of Life Contingencies by Means of T. of Single and Joint Lives*. This paper is reprinted in *Assu. Mag.* (vol. iii. p. 209). [LIFE CONTINGENCIES.]

HARKIN, ALEXANDER, M.D.—Read before the Social Science Congress in 1861 a very excellent paper : *On the Regis. of Births, Deaths and Diseases ; with Special Reference to the Bills of Mr. Cardwell and Lord Naas*. The paper is quoted in several parts of this work.

HARKNESS, JOHN.—Pub. in Edinburgh in 1876 : *T. of Life Assu. Cos. Expenses*. This was printed on card, giving the several expenses of the life offices in numerical order, beginning with the lowest, 3.50 p.c. of the prem. income, descending to the heaviest, which is 78.96. "The worthlessness of such a table for giving a comparative test of a company's soundness must be evident to all connected with the bus. Yet of such are the guides of the people."—*Ins. Circular*, Sept. 1876.

HARMAN, ISAAC.—Was "Clerk" of *Union Fire* in 1800.

- HAROLD, F. RICHARD.**—Has occupied various positions in a multitude of Ins. Offices, of which the following is an imperfect outline. He was trained in the *English Assu. Co.* under Mr. Leyland; from thence he passed to the *Town and County (Lynn)* in 1870. He was afterwards associated with the *London and Midland*. In 1873 he was in New York. In 1874 he founded *Middlesex Fire*, of which he became Sec.; and was reported to have been one of the founders of *Fire Re-insurance Corp.* same year. He was afterwards engaged in founding *Central Re-Ins. So.*; and later in projecting the *Amicable Re-Ins. So.* In 1878 he founded the *Metropolitan Fire*.
- HAROLD, JOHN.**—Promoter of *Nelson Sea Voyages Ins. Co.* in 1854, and on its failure in 1855, became Man. of Liverpool Branch of *Maritime Passengers*, and in 1858 of the branch of *Travellers and Marine Ins. Co.* in the same town. He afterwards abandoned Ins. bus. and adopted literature. He is a very powerful writer on Finance and economic questions.
- HARPINGS.**—In a ship, those planks or wales forming her outer covering, which bend in towards the bow and are fastened in the stem. They are thicker than other parts of the wales, in order to resist not only the action of ice, but that offered by the water as the ship cuts through it.
- HARPPRECHT, FERDINAND CHRISTOPHER.**—Pub. in Tübingen in 1791: *Dissertatio Politico Juridica de Assecuratione Aedum*, etc., etc. 4to. pp. 70.
- HARRIS, DAVID.**—Was for some years, 1864-72, Man. in Scotland for *Briton*, etc., Life, and transacted a considerable bus.
In 1867 he pub.: *An Address on the Principles and Bonus Appropriations of Life Ins.*, wherein the peculiar feature of his then office was very ably handled.
Mr. Harris, who is a gentleman of very considerable ability, has retired from Ins. into commercial life.
- HARRIS, EDWARD.**—Was Sec. of *Hecla Fire*, founded 1875, and afterwards of *Millers Fire*, founded same year.
- HARRIS, JAMES.**—Late Act. and Sec. of *Sun Life*, to which position he was appointed in 1864. He was a gentleman "held in the highest esteem in the profession, and who had raised himself to the eminent position he occupied at a very early age, by his distinguished abilities and his persevering devotion to the practical duties of his calling."
—*Ins. Agent*. He died in 1870, aged 45.
- HARRIS, J. S.**, of Madison, Wis. [now Beveridge & Harris, Chicago].—Devised in 1873 a "Schedule for ascertaining the add. rate to be charged on Brick-buildings exposed by 'Frames'; adapted to any class of 'bricks' not exceeding four stories high, exposed by frames not exceeding four stories in height, having either non-hazardous or hazardous occupancy, in either broken or continuous rows." This schedule is adopted by the Wisconsin and Minnesota State Board, auxiliary to the National Board, and with the assent of the latter. [SCHEDULE RATING.]
- HARRIS, J. W.**—Was Man. of Glasgow branch of *Lond. and Lanc.* in 1876-7. He had previously been Supt. of Agents for the same Co. In 1878 he became Supt. of Agents in Scotland for *Westminster and Gen.* In 1879 Man. in Scotland for *Ocean Railway*, etc., Co. In 1880, for a short time, Supt. of Agents in metropolitan district of *Gresham*.
- HARRIS, S. POTTINGER.**—Was for some years Sec. of *Brewers, Distillers, Licensed Victuallers*, etc.
- HARRIS, WILMER.**—Was formerly Sec. of *Protector Fire*, and on its amalg., in 1836, with the *Phœnix Fire*, became joint Sec. with the late Mr. Lovell, and remained in that position, much respected, down to 1863, when he retired.
- HARRISON, GEO.**—Was Sec. of *United Brothers* in 1854.
- HARRISON, HENRY.**—Was Man. of *Scottish Mut. Plate Glass* in 1868.
- HARRISON, STEWART.**—In 1864-5 this gentleman brought out a plan for extinguishing fires "without human aid—or in other words by making the fire extinguish itself." The method was by water contained in pipes with fusible plugs. The heat from the fire was supposed to melt the fusible plug, and the water to descend at the required spot. This plan was but a modification of Sir Samuel Bentham's, first made known in 1797. See FIRE EXTINGUISHMENT, 1864-5.
- HARRYS, WM.**—Pub. 1550: *The Market or Fayre of Vserers: a new Pasquillus or Dialogue against Vsurye*, etc., trans. from the *High Almaigne*. [USURY.]
- HART, HENRY.**—"General Inspector of Agents" for *Professional Life* in 1852-3, and lecturer and advocate of the principles of that Co. He came into serious conflict with the proprietor and editor of the *Post Mag.* early in 1853, and a very plain-spoken series of art. regarding this gentleman and the Co. he represented will be found in the pages of that serial at this date (*vide* 2 April, 1853), culminating in the suit of *Hartnoll v. Durham*, Chairman of *Professional* in 1854.
- HART, T. P.**—Depot Express Agent, New York. This gentleman on the 10th Feb. 1860, by his cool and brave conduct was considered to have stopped the spread of what must otherwise have been a fire of considerable magnitude. He received a very handsome service of plate by way of testimonial, from the parties interested.
- HARTFORD (CONNECTICUT, U.S.).**—One of the great modern centres of Ins., in nearly all its branches, in the United States. As such it will fall to be noticed in some detail under title UNITED STATES.

But this City has an earlier Ins. history. In the Colonial period, 1744, a body of individuals resident here entered into a compact to insure each other against loss from fire on a system of mutual protection. In looking for a form of contract, they discovered one then in use in *Amsterdam* (but for Marine Ins. only), and known as a "valued pol." This form was made to apply to Fire Ins., and thus a fundamental error in practice was introduced at this early period. The subject will be referred to more in detail under VALUED POL.

We may add that only one known earlier attempt at Fire Underwriting was attempted on the American Continent—this was at Boston in 1724, when there is said to have been a Fire Office. The Philadelphia "Contributionship" was not founded until 1752.

As some evidence of the magnitude of the Fire Ins. transactions of this City, its Cos. contributed under their pol. to the *Chicago* losses (1871) $11\frac{1}{2}$ millions of dollars (£2,300,000), and to the *Boston* losses (1872) £600,000.

We wish all prosperity to the important Ins. interests of this City.

HARTLEPOOL JOINT-STOCK MARINE INS. CO.—Founded in 1847 as a local enterprise; but concerning its subsequent progress we have no details.

HARTLEPOOL MARINE FREIGHT INS. ASSO.—Prov. regis. in 1849, but is believed to have advanced no further.

HARTLEPOOL MUT. MARINE INS. ASSO.—Founded in 1878 for the mut. ins. of the ships belonging to the members. The liability of the members is limited by guar. to £2.

HARTLEPOOL PHŒNIX SHIPPING INS. CO.—Was projected in 1845, but does not appear to have reached the stage of complete regis.

HARTLEY, CHARLES.—Was appointed "Clerk" to *Union F.* in 1776, and remained so for some years.

HARTLEY, DAVID.—At one time M.P. for Hull, became the patentee in 1722 of a plan for building fireproof houses, of which we have given full details under FIREPROOF BUILDINGS, at dates ranging from 1722 to 1785.

There can be doubt that there was a second David Hartley—he who in 1773 obtained a patent from Geo. III. for what was termed his invention; and in commemoration of the experiments under which a pillar is erected on Putney Common. He was famous in political life, and died in 1814, aged 83.

In 1785 he pub. a pamph.: *An Account of the Invention and Use of Fire-Plates for the Security of Buildings and Ships against Fire.* This was reprinted by his nephew in 1834.

In 1791 he pub.: *Observations on Man, his Frame, his Duty, and his Expectations, to which are now added, Notes and Additions to the second part, translated from Pistorius.* Portrait, thick 4to.

See N. & Q. 5th S. vol. vi. p. 177.

HARTLEY, JOHN.—Was the first Registrar of the *Amicable*, appointed under the Charter [sec. xix.] granted by Queen Anne. His salary was fixed at £200 if the members should not exceed 1000, and £300 if the members reached 2000. He was a stationer by trade when selected to fill the office named. He was called upon to take his oath that he would faithfully perform the duties and trusts of his position. His irregularities at one period jeopardized the very existence of the So. See *AMICABLE SO.*, 1711.

HARTLEY, PERCIVAL.—Sec. of *Boiler Ins. and Steam Power Co.* since 1863.

HARTNOLL, JOHN HOOPER.—Late Ed. and Proprietor of *Post Mag.* and *Ins. Monitor*; also of *Post Mag. Almanack*.

Mr. Hartnoll was of Devonshire birth, but came to London in early life to push his fortunes. He became Mathematical Master in the Greenwich Hospital Upper School. In 1833 he founded the *Kentish Mercury*.

1840.—His attention first became strongly drawn to Ins. questions in consequence of the exposure of the *Independent West Middlesex* fraud about this date; and accordingly in this year he founded the *Post Mag.*, the design of which was to gather up fragments of Ins. news and print them on three pages post, leaving the fourth page blank for official correspondence; hence the name of the publication. The *P. M. Almanack* was commenced same year as a companion publication, and speedily became a property.

From the small beginning spoken of, the *Post Mag.* in a few years became a great power—especially during the events of 1852, and some years following. The vols. prior to 1849 are very rarely met with. Publishers' copies were not bound previously.

1852.—He pub.: *The Ann. Balance Sheets of all Ins. Cos. completely regis. from the passing of the Act 7 & 8 Vict. c. 110, to Feb. 5, 1852. To which is prefixed a Letter to the Rt. Hon. E. Cardwell, M.P., President of the Board of Trade, on the Inoperative Character of the Joint-Stock Cos. Regis. Act as a Means of preventing the Formation of Bubble Assu. Cos., or of regulating the Action of those honourably and legitimately Instituted.* Wherein is included a series of startling revelations (many of them reproduced from the pages of the *Post Mag.*) in Mr. Hartnoll's best style. This work had a very wide circulation.

1853.—He pub.: No. 1, "*Ins. Monitor*, conducted by J. Hooper Hartnoll, Ed. of the *Post Mag.*" (dated 1st Oct. 1853). This was intended to appear as a Monthly Supplement to the *Post Mag.*, and was perhaps designed to deal more particularly with Fire Ins. Cos. We believe but two numbers were pub., and the periodical then permanently merged into the *Post Mag.*

Mr. Hartnoll had a collection of choice pictures which at one time he had designed to appropriate to Ins. interests, but he could never decide upon a scheme.

Finally, in June, 1870, he died at the age of 70. Mrs. Hartnoll (who had a life interest in his literary publications) died in Mar. 1877, at a very advanced age. It may be truly said of Mr. Hartnoll, "We shall never see his like again."

HARTUNG, CARL H.—Late Man. of English branch of *Jakor* [Anchor] Ins. Co. of Moscow, which position he accepted in 1874. For some years previously he was Superintendent of Foreign Depart. of *Imperial Fire*, and opened up a very considerable connexion for that Co. He was a great linguist, a good underwriter, and a most popular man. He died suddenly in Sept. 1875, at the early age of 31.

HARTUNG, F. M.—Gen. Man. in Gt. Brit. for *Jakor* [Anchor] in succession to his brother last named. He was previously for 12 years in the *Imperial Fire*, and succeeded his brother in the Foreign depart.

HARVESTS, AS AFFECTING THE MARRIAGE RATE.—The 40th Ann. Rep. of the Regis.-Gen. (pub. 1879) embodied a new feature, in the shape of an attempt to trace the influence of Harvests—as good, bad, moderate, etc.—upon the Marriage-rate of E. and W. This influence is mainly operative so far as the price of food is regulated by the character of the harvest. But political and social causes also exercise some influence, and have consequently to be taken into account.

In our art. **FOOD** we have already dwelt upon these considerations. They will be further reviewed under **MARRIAGE-RATE**.

HARVEY, ALFRED.—Was Sec. of *Manchester Provident* for several years after its commencement in 1866.

HARVEY, C. J.—Man. and Actuary of the *Barbadoes* Mut. Life since 1879; was trained to the bus. in the *Prudential*, in which office he was chief of the Statistical Department for some years. On his retirement from that Co. to fill his present position, he received from his brother officials a testimonial of appreciation in the shape of a handsome gold watch.

HARVEY, DANIEL WHITTLE.—Late Chief Commissioner of the City of London Police Force. He gave evidence before the Select Parl. Committee on Fires in the Metropolis in 1862. He considered that the parochial system was totally defective and inapplicable to the altered state of things. He thought that the protection of life against fire ought to be connected with police duty; and in the City in some measure it was. The cost of the police force in the City was £47,000 p.a. He did not think it would be an advantage for the police to have control of the Fire Brigade (2673). They might aid (2689).

HARVEY, HENRY.—Was Sec. of *London and County* Life and Fire, and of *London and County* Cattle in 1854, and for some years later.

HARVEY, WALTER H.—Sec. of Nottingham Branch of *Scottish Provincial* since 1880. He had been trained to the bus. in the London office of the same Co.

HARVEY, DR. WM.—the discoverer of the circulation of the blood in human beings, in the 17th century.

It was in 1628 that he pub. his work entitled *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus*; in which, it is not too much to say, he exhausted the subject as far as was possible prior to the construction of microscopes. He demonstrated the circulation of the blood as we now know it, showing how the current returning by the veins is received by the right cavities of the heart, and is propelled, by their contraction, along the pulmonary artery to the lungs, where its properties are renewed by the air supplied by respiration, and from whence it is collected and brought back, by the pulmonary vein, to the left cavities of the heart, to be again sent out, by their contraction, through the aorta and the arterial system generally, to maintain the life of all parts of the body, and to be returned through the veins to the right cavities of the heart as before. The capillary vessels, intermediate between the finest branches of the arteries and the smallest radicles of the veins, and by which the passage of the blood from the arterial to the venous system is effected, were concealed from Harvey's vision by their minuteness; but he left no doubt that some such channels of communication must be in existence, and the early microscopists, as soon as the powers at their disposal were sufficient for the research, had but to look for that which they were certain to discover.

It is difficult for those who are not acquainted with medicine or physiology to grasp the full significance of Harvey's work, or to realize what was the state of these sciences before his time, and what he enabled them to become. The great truth which he disclosed has been known for less than three centuries; and we can now no more imagine science deprived of it and of its results than we can imagine England deprived of all public means of locomotion and of conveyance. The whole fabric of modern surgery rests upon Harvey's discovery, since without it, to take only a single illustration, there would be no knowledge of the means of arresting hemorrhage. The whole fabric of modern medicine rests upon it in at least an equal degree, and literally everything which has been done during the past two centuries and a half for the prolongation of life or for the prevention of suffering, not in man only, but also in the lower animals, has been a consequence of Harvey's work. In this sense he demands some notice in these pages. In June, 1878, the Tercentenary of his birth was commemorated with distinction by the leading members of the medical profession.

HARWICH BARGE ALLIANCE ASSURANCE ASSOCIATION.—Founded at Harwich (Essex), 1878, for the mutual insurance of the barges of the members, whose liability is limited by guarantee to £10 each.

HASBROUCH, MR.—Pub. 1872: *Ins. Laws of California*.

HASSALL, DR. A. H., M.D.—Has pub. (*inter alia*) the following important works bearing upon our subject:

1849.—*The Microscopic Anatomy of the Human Body, in Health and Disease*.

1855.—*Food and its Adulterations; comprising the Reports of the Analytical Sanitary Commission of "The Lancet" for 1851-4, revised and extended; being Records of the Results of Microscopical and Chemical Analyses of the Solids and Fluids consumed by all Classes of the Public*. 8vo.

1857.—*Adulterations Detected*.

1876.—*Food: its Adulterations and the Methods for their Detection*.

HASSE, HERR J. M.—Pub. in Gottingen, 1796: *De Indole atque Effectibus Instrumenti Assurationis quod vulgo Polizsam vocant, præsertim ex iure hamburgensi spectati*. 1 vol. 4to.

HASTINGS (SUSSEX).—This (including the neighbouring town of St. Leonards) is one of the great health resorts of the English people. The municipal borough of Hastings (including St. Leonards) contains 1636 acres. It had a pop. in 1861 of 22,910; in 1871, of 29,219—ann. increase 24 p.c. In 1874 the number of houses was 4820, which, at 6·7 persons p. house (as in 1871), would give a pop. of 32,274.

The Regis. District of Hastings includes a rural area of 12,391 acres outside the borough, and here there was a further pop. in 1871 of 6351 persons. The increase of pop. in some of these out districts has been rapid of late years.

The average ann. death-rate of the district during each of the decades 1841-50 and 1851-60 had been 18 p. 1000. During the ten years 1861-70 it was 19·7. Since that date it has had a tendency to return to its former standard; but we have not exact details.

In all such places a correction is desirable of the proportion "who go there to die." This presents a difficulty which has not yet been overcome.

HAT-MONEY.—A small duty paid to the captain and mariners of a ship, more usually designated "primage."

HATCHWAY.—A large opening in a ship's deck for communicating with the hold, etc. There are usually the fore, main, and aft hatchways. In stormy weather the safety of the cargo (as against damage by sea-water) depends upon these being properly secured.

HATTENDORFF, KARL.—Pub. at Hanover, 1859: *Leibrenten und Lebens-Versicherungen von David Jones, deutsch bearbeitet und mit Tabellen versehen*. A translation of the text and formulæ of so much of Jones's treatise as is confined to life contingencies; the numerous tables of which (thought superfluous on the Continent) are supplemented by two selections, one compiled from the mortality records of the *Russian Widows' Provident Asso.* kept from 1776 till 1845, the other from Deparcieux's French Tontine T.

HATTON, EDWARD.—Was Registrar to the *Friendly Fire Office* (founded 1683), and remained in that position for many years.

HATTON, EDWARD (Philomath).—Pub. in 1711: *An Index to Int., containing: 1. Tables of Simple Int. 2. Tables of Discount. 3. Two Tables showing by Inspection the Present Worth of Annuities, and the Purchase thereof. 4. Tables for Valuation of College Leases. 5. Tables of the Amount and Present Worth of any Sum of Money and of Annuities to 61 Years, and Rules to apply them for 122 Years. Likewise basic Rules for Valuation of 1, 2, and 3 Lives, etc., etc. Useful for Lawyers, Merchants, Scriveners, and all others who receive and pay Int. Money*. This is a condensed title. In 1717, a 3rd ed.

He also pub. several works on arithmetic.

HATTON, JOHN.—Has been Sec. of *Brighton and Sussex Mut.* since 1853.

HATTON, WILLIAM.—Late "Actuary, Brunswick Lodge, No. 118, M.U.O.F., and Court Little John, No. 2682, A.O.F.," Brighton. Pub. 1874: *A Treatise on Friendly Sos., with T. constructed from the Sickness and Mort. experienced by Members of the Manchester Unity of Odd Fellows in passing through 1,321,048 Years of Life; being the largest Experience hitherto collected of F. Sos. in the U.K.* This is not an orig. Mort. T. for F. Sos.; but is that known as Odd Fellows, Manchester Unity, Mort. T. (No. 3), as pub. by Mr. Radcliffe, in 1872.

He was also Actuary of Brighton Savings Bank. He died in 1878.

HAUL.—A sea term for pulling up a rope directly. To *haul to the wind*, to bring the ship to sail close by the wind after running in some other direction.

HAUTEFEUILLE, MONS. L. B., Paris.—Has pub. the following works on Ins. topics:

1844.—*Code de la pêche maritime ou commentaire sur les Lois et Ordonnances, qui régissent la pêche Maritime*.

1852.—*Marine Marchande. Décret disciplinaire et pénal du 24 Mars, 1852, expliqué et commenté*.

1860.—*Propriétés privées des sujets belligérants sur mur*. 8vo.

1861.—*Quelques questions de droit International Maritime à propos de la guerre d'Amerique*.

HAVANNAH (or HAVANA).—An important maritime city in Cuba (at the entrance of the

Gulf of Mexico. The deaths in this city in 1869 were reported as 42'36 p. 1000 of the pop. The U.S. *Medical Gazette* for 1870 said hereon :

In connexion with the extraordinary mort. of Havana, it should be noted that an enormous preponderance of deaths occurred among adult white males, as is shown by the subjoined table :

WHITE—Male Adults	3346	NEGRO—Male Adults	722
Female	730	Female	771
Male Children	727	Male Children	421
Female	615	Female	355
	5418		2269

It may, therefore, fairly be assumed, in the absence of an official record of the causes of death, that the chances of war have had a great share in this disproportionate death-rate. The Cuban insurrection broke out in Nov. 1868.

1870.—14th Oct. A hurricane destroyed about 2000 lives.

1873.—Sept. Great Fire, the Plaza Vapor destroyed. Loss estimated at about £600,000, of which £105,000 would fall upon British Ins. Offices—being all the ins. said to exist. Fire supposed to be incendiary.

HAVEN.—A sheltered refuge from the wind and the force of the waves, and with good anchorage. A haven is frequently an anchorage ground outside a port. All havens and ports are under the jurisdiction of the Admiralty. The English Sovereign is declared lord of the whole shore, and Guardian of the ports and havens, which are the inlets and gates of the realm. This is mainly for fiscal purposes, but also in view of protection to shipping. Goods can only be landed at recognized ports, which were defined by 4 Hen. IV. c. 20 (1402); but time and commercial progress have required some additions. [HARBOURS.] [PORTS.] [SEA, DOMINION OF.]

HAVERS, J. B.—Was Sec. of *Farmers and Gen.* from 1864 to 1868.

HAVILAND, ALFRED, M.R.C.S., etc., etc., Lond.—An active worker, mentally and physically, in the cause of Sanitary Reform and Public Health generally. He has pub. the following works bearing upon our subject, and quoted in these pages :

1855.—*Climate, Weather, and Disease; being a Sketch of the Opinions of the most celebrated Antient and Modern Writers with Regard to the Influence of Climate and Weather in producing Disease.*

1860.—*Medicine, and its Relation to Social Science.*

1864.—Paper before the Brit. Asso. : *On the Hour of Death.*

1868.—“*Hurried to Death*”; or, a few Words of Advice on the Danger of Hurry and Excitement, especially addressed to Railway Travellers.

1869.—1. *The Geography of Disease.* 2. *Abstracts of Two Papers on the Geography of Heart Disease and Cancer in E. and W.* 1. *On the Geographical Distribution of Heart Disease and Dropsy in E. and W.* 2. *On the Geographical Distribution of Cancer in E. and W.*

1870.—*The Geographical Distribution of Diseases in England and Wales.*

1871.—*The Geographical Distribution of Heart Disease and Dropsy in E. and W., illustrated with a large coloured map.*

1875.—Paper before Social Science Congress (Brighton) : *The Vital Statis. of the Coastal Districts of E. and W.*

1877.—*Notes and Memoranda of the Sanitary Condition, Geology, V. Statis., etc., of Oundle, Northampton . . . Prepared for the Use of John Simson, Esq., C.B., F.R.S., etc., at the Request of the Court of Assistants of the Grocers Co., Jan. 1877.* [OUNDE.]

Same year, before the Social Science Asso., a paper : *Physical Geography in Relation to Sanitary Science* (Sessional Proceedings, vol. x. p. 203). [SANITARY SCIENCE.]

He had contributed to the *Jour. of Public Health* a paper : *On the Sanitary Regulations of Ancient Rome.*

He has in course of preparation various other works on cognate subjects.

HAVILLAND, COL. DE.—Was many years Actuary of Madras Building Fund. In the Rep. by Messrs. Brown, Hardy, and Col. J. T. Smith, pub. 1863, reference is made to the value of his services to the Fund. See Prelim. Letter (para. 2).

HAVRE.—The chief western maritime port of France, at which a considerable amount of Marine and Fire Ins. bus. are transacted.

In case of a fire a compulsory inquiry is instituted by the Police, whether any suspicion exists or not. The Police collects evidence and the Public Prosecutor institutes investigation. The settlement of the loss is deferred until the termination of the inquiry.

HAWES, WM., M.D., and Philanthropist.—Pub. between the years 1736 and 1808 a number of works, and among them *The Bills of Mort. Lond., 1774–95.*

HAWKINS, A. T.—Was Man. Director of *United English and Scottish* from its commencement down to 1866.

HAWKINS, F. BISSET, M.D.—Pub. 1829 : *Elements of Medical Statistics; containing the Substance of the Culsomian Lectures delivered at the Royal College of Physicians: with numerous Add., Illustrative of the Comparative Salubrity, Longevity, Mortality and Prevalence of Diseases in the Principal Countries and Cities of the Civilized World.* 8vo. pp. 234.

In 1831 : *Hist. of the Epidemic Spasmodic Cholera of Russia.*

HAY, DR. GEORGE, Scottish Roman Catholic Prelate.—Pub. about 1770–80 : *Letters on*

Usury and Interest, wherein he reconciles the practice of taking int. for money with the doctrine of the Scriptures.

HAY, JUDGE GEORGE, of Virginia.—Pub. prob. about 1820 a *Treatise Against the Usury Laws*.—*Allibone*.

HAY FEVER [or, **HAY ASTHMA**].—A febrile influenza or catarrh, incidental to certain susceptible constitutions at the period of hay-making.—*Hoblyn*.

HAYCRAFT, J. B.—Was Actuary to the Unity General from 1860 until it amalgamated. Was also Actuary to *Volunteer Service and General* until his death in 1862.

HAYDEN, HENRY R.—Proprietor and Ed. of *Ins. Journal* of Hartford (Conn.), a paper conducted with integrity and independence. He has been twice returned as a member of the Legislature of his State, and has served on the Ins. Committee.

In 1866 he read before the American Social Science Asso. (Saratoga meeting), a paper: *Ins. as a Social Force*, embodying many useful views, pleasantly stated.

We have to thank Mr. Hayden for many courtesies, and always hold him in pleasant remembrance.

HAYES, JOHN L.—Sec. of National Asso. of Wool Manufacturers, U.S.—Pub. first about 1870 in the *Quarterly Bulletin* of that Asso., and afterwards in pamph. form: *Fires in Woollen Mills, their Causes and Means of Prevention and Extinction*.

HAYES, RICHARD.—"Teacher of merchants accounts in that part of Cannon St. called Eastcheap," pub. (*inter alia*) the following works bearing upon annuities, etc.:

1720, or earlier.—"*The Purchaser's Pocket Companion, shewing at Sight what Interest is Made by Money laid out in the Cos. Stocks, or any other Publick Funds, with the Easiest Method to cast up the present Worth of Lands, Houses, Annuities, Fines, Repairs, Reversions, etc.*"

1727.—"*A New Method for Valuing of Annuities upon Lives, shewing at Sight as follows: [Then T. of contents of work.] Together with many Useful Examples and Instructions for Valuing of Single Lives, Two or more Lives; Lives taken in with other Lives; Reversion of Lives; Annuities in Expectation, an Instance in the Mercers' Company; Estates for any certain Term of Years, as Freeholds, Leaseholds and Reversions, without any Decimals, etc. The whole being made easy to a common capacity.*" [ANNUITIES ON LIVES.]

1728.—"*An Estimate of Places for Life; shewing how many Years Purchase a Place for Life is worth. How long a Man must hold his Place to have the Value, Principal, and Int. of the Purchase Money, etc., etc.*" [PLACES FOR LIFE.]

1746.—2nd ed. of his work on Annuities, with a variation in the title. [ANNUITIES ON LIVES.]

He sometimes described himself as living "over against Stocks Market."

HAYES, WILLIAM JAMES.—Late Assistant Man. in London Office of *N. Brit. and Mercantile*, and previously for some years in the *Royal* (London Office). He died in 1873 still a young man.

HAYGARTH, DR. JOHN (of Chester).—In the *Philos. Trans.* for 1774 and 1775 are two excellent papers by this gentleman, in which he gives the Bills of Mort. for that city for the years 1772 and 1773 respectively, in a form calculated to exhibit, at one view, the most useful and interesting information such bills can afford, without calculation; and presenting to the calculator *data* that are essential to the solution of the most important questions respecting the state of the pop.—*Milne*.

Dr. Price used the above materials, and a continuation of them extending in all over ten years 1772-81, in constructing his *Chester T. of Mort.* pub. in 1783. Sir J. W. Lubbock in his Cambridge paper (1829), *On the Comparison of various T. of Annu.*, speaks favourably of these Bills [*Assu. Mag.* vol. v. p. 277].

The following are such other of his works as fall within the scope of our subjects:

1785.—"*Inquiry how to prevent the Smallpox; and Proceedings of a So. for Promoting Inoculation in Chester.*" 8vo. Chester.

1793.—"*Sketch of a Plan to Exterminate the Casual Smallpox from Gt. Brit.*" [by Inoculation]. 8vo. Lond. [SMALLPOX.]

1801.—"*Letter to Dr. Percival on the Prevention of Infectious Fevers, and Address to the College of Physicians, Philadelphia, on the Prevention of the American Pestilence.*" 8vo. Bath. [YELLOW FEVER.]

HAYMAN, WM.—For many years (from 1854) of *Kent Mut. Ship Ins. Asso.*

HAYNES, MR.—Pub. in 1741: *The Gentleman's Compleat Book-keeper and Tables of the Value of Leases and Annu. for Years Certain, and on Lives.*

And in 1746: *Tables of the Value of Annu. on Terms certain and on Lives, and of paying Fines for Cathedral and College Lands.*

HAYS, WILLIAM IVERY (Printer).—A name very familiar a quarter of a century ago as the promoter of various Ins. Asso.

HAYWOOD, G. R.—Was for some years Sec. of Manchester Branch of *Provident Clerks*.

HAZARD.—A single element of danger, and component part of a risk. Equivalent in Fire Ins. to the word "Peril" in Marine Ins. Pol. in its ordinary sense. [EXTERNAL HAZARD.] [INTERNAL HAZARD.] [SCHEDULE RATING.]

In Law, an unlawful game.—4 *Step. Com.* 353.

HAZARDOUS.—This is a technical term formerly much used in the classification of risks

in Fire Ins. There are four classes : *Non-Hazardous, Hazardous, Extra-Hazardous* and *Specially Hazardous*. The old classification of "Doubly-Hazardous" has ceased in practice.

The first use of the term "hazardous" in connexion with Fire Ins. appears to have been in the prosp. of the *Union Fire, 1714*.

The growing use of the term is shown under title FIRE INS., CLASSIFICATION OF GOODS.

HAZARDOUS GOODS.—What constitutes hazardous goods, from a Fire Ins. point of view, has been set out in some detail under FIRE INS., CLASSIFICATION OF GOODS.

There are also hazardous goods in connexion with Marine Ins. See PROPER VICE ; STOWAGE OF MERCHANDIZE.

The following cases have reference mostly to Fire Ins. contracts.

1821.—In the English case of *Dobson v. Sotheby* and others [*Beacon Fire*], the terms of the pol. were for an ins. on premises of a specified character, "where no fire is kept, and no hazardous goods are deposited." The loss happened in consequence of making a fire and bringing a tar-barrel on the premises for the purpose of repairing them. It was held that these words must be understood in the sense of the habitual use of fire and deposit of hazardous goods ; and hence the insured was entitled to recover.

1849.—In the American case of *Richards v. Protection Ins. Co.*, the pol. was issued upon "a stock in trade consisting of non-hazardous merchandize ;" but the insured kept amongst other goods for sale, the articles of oil and glass, which in the "Conditions" were denominated "hazardous." Held, as follows :—1. The description of property insured in the body of the pol., when the rate of prem. is thereby affected, operates as a warranty that the property is of the class described, and is of the nature of a condition precedent ; and performance of it must be shown by the insured before he can recover under the pol. 2. Where the conditions annexed to a pol. of ins. of goods against fire, and referred to in the body of it, divide insurable articles into several classes, some as being more hazardous, and therefore requiring a higher rate of prem. than others, the parties are considered as agreeing to the rightfulness of the classification, and cannot be permitted to prove it inaccurate. 3. Thus where the conditions exhibit one sort of goods as not hazardous, and another as hazardous, the insured cannot offer proof that no greater risk attached to the ins. of the latter than to the former ; nor that a particular article asserted in the conditions to belong to one of the classes did in reality belong to another class. 4. A representation by the insured, that the goods insured belong to the former description, is a warranty of that fact. 5. Such a representation extends not merely to the time of taking the pol., but it warrants that the goods shall continue to be of that description, during the whole continuance of the pol. ; and that not merely a part of the goods, but all of them, are and shall be of that description. 6. The violation of such a warranty by the insured will defeat the pol. (30 Maine, 273.)

1855.—In the American case of *Westfall v. Hudson River Ins. Co.*, the pol. declared that the carrying on of any of the occupations mentioned in the hazardous, extra-hazardous, or special-rate classes, in the building, or using it for storing or keeping any of the articles enumerated in these classes, should suspend the operation of the pol. for the time, unless such use of the premises should be specially provided for therein, or should be afterwards agreed to in writing, to be added to or endorsed on the pol. Held—1. That this language, in connexion with the statement annexed to the enumeration of the hazardous and extra-hazardous occupations and articles, to the effect that a specified add. prem. would be required where these more dangerous trades are carried on and such combustibles are kept, showed that it was not intended to exclude such employment and property from the privilege of being insured, but only that the insured parties in respect of them should pay such add. prem. as was deemed adequate to the increased risk : and that the corp. should not be deemed to have assented to take that class of risks without an express provision to that effect. 2. That there being no such express provision, the use of camphene for lighting purposes (camphene being one of the articles referred to in the restrictive clauses) avoided the contract. (12 N. Y. 289.)

1862.—In the American case of *Rathbone v. City Fire Ins. Co.* the pol. of ins. upon personal property contained a condition that if the building in which it was kept should be used for the purpose of storing any of the articles denominated "hazardous," except as specially agreed to by the Co., and endorsed on the pol., the ins. should be void. The pol. contained a schedule of articles denominated "hazardous," among which was "wine in casks"—the same being placed under the head of articles considered hazardous on account of their liability to damage, but for which the rate on the building was not to be increased. Held, that a reasonable construction of this condition would make it apply only to the class of hazardous articles by which the risk in the building was increased. (31 Conn. 193.)

Same year, in the American case of *Phoenix Ins. Co. v. Lawrence*, it was held, that if by the terms of a pol., the keeping or storing of certain articles on the insured premises is prohibited during its continuance, and the pol. *suspended* whilst they are so kept, the pol. is not thereby rendered void. (4 Met. Ky. 9.)

1864.—In the American case of *Peoria Marine and Fire Ins. Co. v. Hall* it was provided by the pol. that the keeping of "gunpowder" without written permission in the pol. should render the pol. void. Held—1. That if the agent taking ins. on the stock of

goods knew that gunpowder was kept, and to be kept, the keeping it would not render the pol. void, whether permission to keep it was endorsed or intended, or neglected to be endorsed, or not. 2. That notice of this fact to the agent was notice to the principal, and by taking the prem. and issuing the pol., the insurer must be regarded as having waived the condition which prohibited gunpowder being kept. (12 Mich. 202.)

1868.—In the American case of *Commercial Ins. Co. v. Mehlman*, the pol. provided that if certain articles should be kept on the premises without the written consent of the Co., the pol. would be vitiated. The insured kept one of the prohibited articles for sale. *Held*, that the Co. was relieved from its liability. (48 Ill. 313.) The prohibited article was saltpetre.

When property is enumerated as "hazardous," or "extra-hazardous," or otherwise specified as peculiarly exposed to risk, the rule that *the expression of one thing excludes what is not expressed* is applicable; thus: if the pol. enumerates "goods hazardous and extra-hazardous," anything more hazardous would not be covered; and strict constructionists hold that "goods *non-hazardous*" would not be included under such wording of the pol., where no particular goods were described by name—the liability of the pol. being confined to goods of the two classes distinctly named and described in the classification of hazards.—Griswold's *Fire Underwriter's Text-Book*, p. 232.

The preceding constitute but an outline of the many points arising hereunder. ALTERATIONS IN STRUCTURE AND USE OF BUILDINGS; CONCEALMENT; CONDITION PRECEDENT; GUNPOWDER; ILLEGAL ARTICLES; INCREASE OF RISK; PROHIBITED GOODS; PROHIBITED TRADES; PROPER VICE; STORING OF GOODS; STOWAGE OF MERCHANDIZE; VIOLATION OF LAW; WARRANTIES.

HAZARDOUS TRADES.—The degree of hazard attaching to a trade, as that of a carpenter, turner, or other worker in wood, up to floor-cloth manufacturer, sugar baker, or varnish maker, affects the risk not only of the contents of the building, but of the building itself, as frequently also of the adjacent property. Hence it has come to be a maxim of Fire Underwriting, that the risk of a building has to be measured by its contents, plus its external "exposures." [EXPOSURES.]

The subject is in part treated under the preceding title, and the cross references will be the same. The following cases are supplemental, as bearing more particularly on trades.

1843.—In the English case of *Pim v. Reid* (*Imperial Ins. Co.*) the plts. effected a pol. of ins. against fire, subject (*inter alia*) to the following condition: "In the ins. of goods, etc., the building or place in which the same are deposited is to be described, the quantity and description of such goods, also whether any hazardous trade is carried on, or any hazardous articles deposited therein; and if any person shall insure his goods or building, and shall cause the same to be described otherwise than they really are, to the prejudice of the Co., or shall misrepresent or omit to communicate any circumstance which is material to be made known to the Co., in order to enable them to judge of the risk they have undertaken, or are required to undertake, such ins. shall be of no force." *Held*, that this condition was to be referred to the time when the pol. was to be effected, and that in the absence of fraud, neither by the general law of ins., nor by such condition, was the pol. avoided by the circumstance that subsequently to the effecting the pol. a more hazardous trade had, without notice to the Co., been carried on upon the premises. (6 Man. & G. 1.)

1852.—In the American case of *Mead v. North Western Ins. Co.*, the pol. contained a prohibition against using the building insured for carrying on or exercising therein any hazardous or extra-hazardous bus. *Held*, that the prohibition is prospective, and a violation of it avoids the pol. though the loss was not caused thereby; and this too though the prohibited use be terminated before the loss, and though the insured be not aware of such use at the time. (3 Selden, N.Y. Appeals, 350.)

1860.—In the American case of *Howell's Executors v. Baltimore Equitable So.* it was *held*, that under the clause of a fire pol. making it "void" if any unauthorized hazardous trade, increasing the risk, was carried on in the building, the fact that such trade was carried on avoids the pol., no matter what the cause or origin of the fire, or that such trade was carried on by the tenant of the insured, without his knowledge or consent. (16 Md. 377.)

HAZE.—Vapour which renders the air thick, with little or no dampness; a slight lack of transparency in the air:

O'er the sky
The silvery haze of summer drawn.—Tennyson.

The "dry fogs" which have been observed by some medical writers are of this character. These were particularly observed in 1782, when *Influenza* was more widely epidemic than it had ever been before. A haze has been noticed in *Cholera* districts by many observers. In 1782 the haze was seen in a mass; it was of a pale blue, possessed drying properties, and had a strong and peculiar odour.—Haviland, *Climate*, etc., p. 141.

In 1783 there was an eruption of Mount Hecla—the most tremendous one on record; it was accompanied by violent wind and rain, and a darkness of the heavens. The haze was supposed to be connected with the earthquakes of that year; and the epidemics with the haze. A severe thunder-storm in the summer cleared the air.

Dr. Prout regarded it as highly prob. that some such mineral as *selenium*, nearly allied to sulphur, and a volcanic product, when combined with hydrogen gas, was capable of producing all the effects which characterize influenza. [INFLUENZA.]

In the present day a hazy atmosphere is usually associated with blight of vegetation. [EPIDEMICS.] [PLAGUE.]

HEAD.—The fore extremity of a ship, where was formerly placed the "Figure-head." By the head implies that the ship's head is depressed in the water.

HEAD, DISEASES OF THE.—Under title BRAIN we have reviewed some of the diseases which would otherwise fall to be mentioned here. Dr. Fleming, in his *Medical Statistics of Life Assu.* (1862, p. 46), furnishes some details of interest. Thus the per-centage of deaths from Disease of the Brain, etc., amongst the entire pop. of E. and W. during the 7 years 1848-54, was found to be '153, whilst in the *Gotha* So. it had been '282, and in the *Scottish Amicable* '230. The per-centage on the deaths from *all causes* was in E. and W. for the years named 9'80; while the mort. statistics of several life offices gave the results following: *Gotha* So. 15'20; *S. Amicable*, 16'81; *S. Widows*, 22'40; *Standard*, 20'16; *N. British*, 19'72; *Equitable* So., 20'04. Hence it is observed that the mort. from this group of diseases was much higher among insured lives than among the general pop., whether estimated on the lives at risk or on the deaths from all causes. *The mort. from this cause was, however, chiefly at advanced ages*, as over 55, and especially between 65 and 76. Dr. Fleming remarks generally:

The commonly received opinion that persons of peculiar physical configuration—those with short necks, full and corpulent habit of body, large heads and ruddy countenances—are prone to apoplexy and other head diseases, is, no doubt, correct; but the converse by no means holds so true as is generally believed: for we find many individuals are the subjects of these affections of the head, who are free from the above physical characteristics; in fact the tall, thin, and athletic are, in my obs., about as often attacked as the plethoric. Disease of the heart and blood vessels is undoubtedly a frequent cause of head affections, notwithstanding that a contrary opinion is held by some pathologists, and must never be lost sight of in the examination of applicants for assu. In the certificates of death it is not unlikely that these two causes may occasionally be transposed.

He adds that the great extra mort. which occurs amongst the insured class from this cause requires some investigation, and then offers the following reflections thereon:

So far as I can judge, the causes are to be ascribed mainly to moral temperament, occupation, and industrious habits. As a class the assured are thoughtful, hard-working bus. men, anxious for the welfare of their families, and their advancement in life. Their occupations, whether those of literature, politics, the learned professions, or commerce, have required at all times, but more particularly of late years, great mental application, and are attended with much excitement and many vicissitudes. The tendency to transactions of great magnitude, the increase of speculation, the frequency and rapidity of travelling, . . . all tend to make men live faster, and call for a greater strain than formerly on the nervous system of that class, whose success in life depends on the exercise of their mental powers. Consequently it is much as might be expected, to find that the mort. from diseases of the brain, and Nervous System, is greater among them, than among those who live comparatively at ease, or those who gain their bread by following occupations of a more mechanical character, and where the mental powers are much less called into action.

He further considers that much injury results to a large class from residence at a distance from their places of bus., and the effects of railway travelling upon their system. This point will fall to be considered under RAILWAY TRAVELLING.

HEAD OFFICE.—Under the Pol. of Assu. Act, 1867, it is required (sec. 4) that every Ins. Co. should on every pol. issued after 30 Sept. 1867, specify their principal place, or principal places of bus., at which notices of assignment might be given pursuant to that Act. The measure applied to Life pol. only. [ASSIGNMENT OF POL.]

But quite apart from such purposes as the preceding Act contemplated, there are good reasons why every ins. should specify upon its pol. where its head office is located. This may be important for fiscal purposes, also with regard to the taking out of Probate, and the production of the same, or of letters of administration, and generally as to posting of notice and other proofs of claim.

But still more important may be the question as affecting jurisdiction, for the purpose of suing or being sued. Thus in the case of the *Sceptre* (now in liq.) in 1879, the head office of the Co. was in the West-end of London, beyond the bounds of the City: accordingly the Mayor's Court had no jurisdiction.

In the case of Cos. formed under the Cos. Act, 1862, the registered office is supposed to be the head office, for all legal purposes. [REGISTERED OFFICE.]

HEADACHE.—This is a common symptom in various diseases: it frequently occurs both in full and in debilitated habits, and also in persons who are otherwise healthy. One form of headache consists in a degree of torpor and of confusion, with a dull pain over the whole head, dimness of sight, and inability to attend to anything requiring thought or fixed attention. This sometimes is the result of disordered stomach; but not unfrequently has more deeply seated causes. The attention of the medical examiner should be given in view of solving the true origin.

HEADMOULDSHOT.—This and *Horseshothead* appeared in the earlier Bills of Mort. as a cause of death. They were popular and not very unreasonable synonyms for water in the head—*Hydrocephalus*. Headmouldshot refers to the alteration produced in the mould (or fontanelle) by the effused fluid; the separation of the bones of the skull, which is natural in the infant, being often enormously increased. About 1726 a more correct classification was adopted.

HEALING ; HEALING ART ; HEALING, GIFT OF.—The effect of progress of the Healing Art based upon scientific knowledge, on the duration of human life, is not capable of exact proof ; but it will be referred to under title **LONGEVITY**. Regarding the Healing Art (so called) or the Gift of Healing (apart from the science of medicine), there have been many quaint fancies, some of which are perpetuated in our national history. These usually amount to something like gross superstition, except that they are softened down by a species of religious belief.

The Gift of Healing, in the sense last expressed, is traced from our Saviour to the Apostles, thence by a continual line of Christian kings and governors and holy men, down to our own Edward the Confessor, and onwards. Shakespeare, in *Macbeth* (act iv. sc. 3) depicts the crowd waiting at the palace gates for the "touch" of the king :

. . . There are a crew of wretched souls
That stay his cure : their malady convinces
The great assay of art ; but at his touch,
Such sanctity hath heaven given his hand
They presently amend.

The Kings of France also claimed the right to dispense the Gift of Healing ; and it is admitted to have been exercised by Philip I. ; but the French historians say he was deprived of the power on account of the irregularity of his life. This disqualification is not supposed to have applied to the English kings. See **KING'S EVIL, SCROFULA**.

HEALTH (HUMAN).—The condition of being sound in body, and free from physical disease ; possessing the full faculties of body and mind, in a well-regulated condition. To attain and maintain this condition is the highest aim of living, in a physical sense.

Dr. Aitkin, in his *Science and Practice of Medicine* (3rd ed. 1864, p. 6), says :

Health is merely a name we give to that state or condition in which a person exists fully able, without suffering, to perform all the duties of life. Many degrees of this state are therefore, at first sight, obvious, from the possession of a feeble existence to the most robust condition of the body ; and there are many degrees of feebleness and delicacy of health, which we cannot say are due either to disordered or diseased states of the frame. Our notions of *normal life* are thus so extremely indefinite, that it is only by a forced abstraction the normal can be separated from the abnormal. Hence, also, our idea of *disease* is very indefinite ; it cannot be separated by any well-defined boundary from our idea of *normal life*, and the two conditions are connected by a kind of debatable border-land.

When we regard, therefore, the phenomena of the living state and the conditions of health, we can readily observe when and how *disease is but a deviation from the state of health consisting for the most part in a change in the proper ties or structure of any tissue or organ, which renders such tissue or organ unfit for the performance of the actions or functions according to the laws of the healthy frame.*

Under title **GOOD HEALTH** we have considered the question from an Ins. point of view ; in a later article we shall review it in relation to **LONGEVITY**. It is our purpose here to notice briefly what may be designated the artificial devices and attempts towards securing Health to the human race from the time of the earliest records. In this connexion it has to be remarked that the extensive range of medical literature consists of two broad sections—the one *preventive*, the other *curative*. It is with the former we now have to deal, and it is very much the smaller of the two. It would be impossible to prepare an entirely exhaustive summary ; nor is it necessary. It is enough to show that the efforts are and have been continuous among all civilized communities.

The earlier history of hygiene is found in the most remote records of civilized nations. The Chaldeans and Egyptians associated its tenets with the mysteries of their religion. The divinely-attributed legis. of the Jews was penetrated throughout by the principles of preventive medicine. The Mohammadans and Hindoos seem to have had a sanitary basis for portions of their moral code ; and in ancient Greece the first object of the law-giver was so to train youths as to produce the most perfect health possible, both in body and mind. The laws of Lycurgus had for their main object the physical perfection of man. Scarcely was the Spartan born when his education, physically as well as mentally, became one of the most important affairs of the State. At the age of seven he began the graduated exercises—the habits of sobriety and obedience—which were to develop his frame into some accordance with those high types of manly excellence which have been left to us as the legacies of Grecian art. (Vide paper by Dr. Arthur Ransome, F.R.S., in *Sanitary Record*, vol. i. p. 117.) [GREECE.]

The aim of many of these early nations was no less the public than the private health of their citizens. In this sense their regulations will be reviewed more particularly under title **PUBLIC HEALTH**.

1474.—The earliest known printed work on the preservation of Health is by Dr. Hieronymo Manfredi : *Liber de Homine, cujus sunt libri duo, primus liber de conservatione sanitatis et de causis et naturis omnium eorum quæ sumuntur in cibo*. This singular work is called "Il Perche," because each paragraph or question begins with that expression. Many of the questions and answers were suppressed in the later editions. The vol. contains a curious poem in *terza rima* on Diet and Regimen. [A copy of this book may

be seen in the Library of the Medical and Chirurgical So. of London, and is the oldest printed book in that most excellent collection.]

1505.—There was pub.: *Regimen Sanitatis a magistro Arnolde de Nova Villa Cathalano et aliis doctoribus Salerniensibus*. (4to. Paris.) By Salerno.

1506.—*Pro Regimine seu preservatione sanitatis: De Esculentis et Poculentis dialogus*. By Gaspar Torella vel Torrella. Fo. Besicken.

1515.—*Omnia Opera, cum quibusdam aliis opusculis: Lib. de definitionibus, de elementis, liber dietarum, de urinis, de febrilibus, Pantechni libri, Viaticum, Constantinus de Gradibus medicinarum, de oculis, de stomacho, de simplici medicina, et compendium megatechni Galeni*. Fo. Lugduni.

1517.—*Consiliorum repertorium, additis Rabbi Moysi de regimine vitæ quinque tractatibus, Raymundi Lulii de secretis naturæ libris duobus, et consiliis quibusdam Blasii Astarrii; nunc primum in lucem editis*. Fo. Papie.

1518.—By Champerius [Champier]: *Rosa Gallica, Omnibus Sanitatem Affectionibus utilis et necessaria, etc., una cum sua pretiosa Margarita*. 12mo. Paris.

1520.—By Georgius Valla: *De Urinæ significatione, ex Hippocrate, Paulo Æginata ac Theophilo; Galeni quæstiones in Hippocratem, Diocles de bona Valetudine tuenda*. 18mo. Argent.

1526.—By Thomas Cogan, an English Physician: *Haven of Health for all those who have a Care of their Health. Hereunto is added a Preservation from the Pestilence and late Sickness at Oxford*. In 1586 another ed. was pub.: *The Haven of Health, made for the Comfort of Students; with a Censure of the late Sickness at Oxford, etc.* Other eds. with varying titles have been pub.

1527.—By Averrhoes: *Collectanea de re Medica: de sanitatis functionibus, de sanitate tuenda, et de curandis morbis; Latinitate donata a J. Bruyerino Campegio*. 4to. Lugd.

1530.—By Baptista Platina: *De Honestæ Voluptate, de ratione victus et modo vivendi et de arte coquendi*. 12mo. Paris.

1533.—By Hessus Eobanus: *Bonæ Valetudinis conservandæ præcepta medicinæ laus, etc.* 12mo. Paris.

1537.—By Andreas Turinus: *De curatione Pleuritidis per venæ sectionem; addita est de Cæna et Prandio*. 4to. Lugd.

1538.—By Jason a Pratis: *De tuenda Sanitate libri Quatuor*. 4to. Antverpiæ.

1541.—By Sir Thomas Elyot: *The Castell of Helth, corrected, and in some places augmented by the first author therof, Sir Thomas Elyot, knight, the yere of our lorde 1541*. Black-letter, 12mo. "Imprinted at London in the house late Thomas Berthelettes."

By Albanus Torinus: *Paraphrases in libros Alexandri Tralliani super morborum ac febrium causis, signis, remediisque; [prefix:] D. Carystius, de tuenda sanitate*. Fo. Basil.

1542.—By Apicius Cælius: *De Opsoniis et Condimentis, sive arte Coquinaria, item G. Humelbergii annotationes*. 4to. Tiguri.

1547.—The famous Dr. Andrew Borde pub. this year: *The Breviary of Helthe for all manner of Sickneses and Diseases, the which may be in Man or Woman: expressing the obscure termes of Greek, Araby, Latyn, and Barbary in Englishe, concernyng Physicke and Chirurgerie. The seconde Boke of the Breviary of Helthe, named the Extravagantes followeth*. This was supposed by Fuller to be the first medical work printed in England; but he was in error. (See 1562.)

By Polybus: *Opuscula: de tuenda valetudine, de semine humano, et de morbis; e Græco in Latinum ab A. Torino*. 4to. Basil.

1550.—By Villinganus Pietorius: *Dialogi del Modo del conservare la Sanita; aggiuntovi Arnaldo di Villa Nuova, del modo di conservar la Gioventu e ritardar la Vecchiezza*. 12mo. Vinegia.

1552.—By Giovan Valverde: *De animi et corporis Sanitate tuenda libellus*. 12mo. Lutet.

1558.—By Buranus Lommius: *Commentarii de Sanitate tuenda in primum librum de re medica Celsi*. 12mo. Lovanii.

1559.—By Wm. Bullein [or Bulleyn]: *A newe Boke of Phisicke, called y^e Government of Health, wherein be uttered many notable rules for man's Preservation, with sondry simples and other matters; reduced into the forme of a dialogue, with a sufferain Regiment against the pestilence*. Black-letter, 18mo. London: Ihon Day. (See 1562.)

1560.—By Joannes Campegius Bruyerinus: *De re Cibaria*. 8vo. Lugduni.

1561.—By Simeo Sethus vel Sethi: *De Alimentorum facultate; a Lilio G. Giraldo latinitate donatum*. 12mo. Basil.

1562.—Dr. Andrew Borde pub.: *Compendyonse Regimente, or Dietary of Helthe, made in Mount Pyllor*. The first 8 chap. of this work appear to have been published anonymously, under the title of: *Boke for to lerne a man to be wyse in buylding of his house for the Helth of Body, and to holde Quyetnes for the helthe of his soule and body, etc.* Imprinted by me Robert Wyer, dwellynge at the sygne of St. Iohn Euangelyst, etc. This has been reprinted by the Early English Text So.

By Wm. Bullein [or Bulleyn]: *Bulwarke of Defence againste all Sicknes, Sores, and Woundes that dooe daily Assaulte mankinde, whiche Bulwarke is kepte with Hillarius the*

Gardiner, *Health the Phisician with their chyrurgian to helpe the wounded soldiors*. Black-letter, fo.

1564.—By Philip Moore: *The Hope of Health*. Black-letter.

1568.—By Hugo Fridævalles: *De tuenda Sanitate*.

1572.—By William Langham, M.D., "Practitioner in Physic": *Garden of Health, conteyning the Rare and Hidden Vertues of Simples and Plants to be used and applied in medicine for the Health of Man's Body*. Other eds. were pub. in 1579 and 1633.

1574.—By Gulielmus Gratarolus: *A Direction for the Health of Magistrates and Studentes, namely, suche as bee in their consistent age or neere thereunto*; Englished by T. N[ewton]. Black-letter, 18mo.

1576.—By Conrad Gesner: *The newe Jewell of Health, wherein is containyd the most excellent Secretes of Phisicke and Philosophie, Distillations, Oyles, Balmes, etc., published in English by George Baker*. Black-letter, 4to.

1577.—By Joannes Liebault: *Thesaurus Sanitatis paratu facilis [pauperum] ex variis authoribus [de Peste, Venenorum remedia de Lue Hispanica seu morbo Gallico, etc.]* 18mo. Paris.

1583.—By Timotheus Bright, M.D.: *Hygieina, id est de Sanitate tuenda*. 12mo.

1591.—By Montalbus, or à Montalbo: *De Homine sano*. 8vo. Francof.

1602.—By Joannes J. Scharanclæus: *De ratione conservandæ Sanitatis*. 18mo. Amst.

1603.—By Franciscus Bonamicus: *De Alimento, libra V.* 4to. Florent.

1605.—By Thomas Cogan: *The Haven of Health, chiefly made for the Comfort of Students, amplified upon five words of Hippocrates: Labour, Meal, Drinke, Sleepe, Venus; with a Preservation from the Pestilence*. 4to. Black-letter.

By Marsilius Cagnatus: *De Sanitate tuenda libri duo: de Continentia et de arte Gymnastica*. 4to. Patavii.

1607.—By Joannes Sporischius: *Tractatus de ratione inveniendi composita Medicamenta, et de modo curandi per dietam*. 12mo. Lipsiæ.

1610.—Joannes Ambianus Riolanus, senior, in his *Opera Omnia*, pub. this year, gave a chap. on "Dieta Sanorum."

1615.—Josephus Quercetanus pub.: *Diateticon Polyhistoricon*. 12mo. Lipsiæ.

1617.—Sir Wm. Vaughan pub.: *Directions for Health, naturall and artificiall*. 4to. This work passed through many eds.

1623.—Leonard Lessius: *Hygiasticon seu vera ratio valetudinis bonæ et vitæ; subjungitur L. Cornarus de vitæ sobria commodis*. 12mo. Antv.

In 1634 there was pub. in Cambridge a translation of the above: *Hygiasticon, or the right course of preserving Life and Health unto Extreame old age; done into English [by T. S.]* 24mo. This also contained Cornaro's Treatise on Temperance, translated by George Herbert, and a Paradox: that a spare diet is better than a splendid and sumptuous.

By James Hart, M.D., "Doctor in Physic": *The Diet of the Diseased, the Aire, and other Elements, Meat, Drinke, and Divers other things discussed, collected as well out of the Writings of Ancient Philosophers, as out of Divers Modern Writers*. Fo. Other eds. 1625 and 1633.

1624.—Johannes Juncker pub.: *Methodus Therapeutica: Dieta et Ligni Guaiaci Administratio*. 4to.

1627.—By Ludovicus Nonnius: *Diateticon sive de re Cibaria*. 12mo. Antverpiæ. Galeatius Laudrinus: *Problematum ad Sanitatem et gritudinem, etc., spectantia*. 4to. Ferrariæ.

1628.—There was pub.: *Via Recta ad Vitam Longam: Or, A Plaine Philosophicall Demonstration of the Nature, Faculties, and Effects of all such things as by way of nourishments make for the preservation of health, with diuers necessary dieticall obseruations; as also of the true use and effects of sleepe, exercise, excretions, and perambulations, with iust applications to euery age, constitution of body, and time of yere*. By To. Venner, Doctor of Physicke in Bathe. "Whereunto is annexed a necessary and compendious Treatise of the famous Baths of Bathe lately pub. by the same author." London: Imprinted by Felix Kingston, for Richard Moore, and are to be sold at his Shop in St. Dunstons Church-yard in Fleet Street. This is a very remarkable book.

Same year, by Joannes D. Sala: *De Alimentis et eorum recta Administratione*. 4to. Patavii.

1629.—By Gulielmus Fabricius Hildanus: *De Conservanda Valetudine*. 4to. Mæn.

1637.—By Joannes Stephanus: *In Aristotelis libellum de Conservatione Sanitatis Commentarius*. 4to. Venet.

1642.—By Sanctorius: *Ars de Statica Medicina, Aphorismorum sectionibus octo comprehensa*. 18mo. Lugd. Bat.

1656.—Frediano Elici: *Arca Novella di Sanita, trattato fisco morale con regole per conservarsi sano e vivere virtuosamente*. 12mo. Lucca.

1660.—Alexander Deodatus: *Valetudinarium*. 18mo. Lugd. Bat.

1661.—There was pub. by Nicholas Culpeper, "Student in Physic and Astrology": *Cole, and Sennert's Rational Physicians' Library, and 13 Books of Natural Philosophy, containing a Description of the Earth and Man, the Heavens and Elements, Minerals and*

Metals, of Generation, and Spontaneous Generation, Anatomy, the Practice of Physic and Surgery, Health for Rich and Poor by Diet, without Physic, etc. Thick fo.

1662.—By Baldassar Pisanelli: *De Alimentorum facultatibus*. 18mo. Brux.

Same year, there was pub.: *The English Physician, Enlarged, with Three Hundred Sixty and Nine Medicines, made of English Herbs that were not in any impression until now: The Epistle will inform you how to know this Impression from any other. Being an Astrolo-Physical Discourse of the Vulgar Herbs of this Nation. Containing a Compleat Method of Physick, whereby a man may Preserve his Body in Health; or Cure Himself being sick, for three pence charge, with such things only as grow in England, they being most fit for English Bodies, etc., etc.* By Nich. Culpeper, Gent. Student in Physick and Astrology. London: Printed by Peter Cole, Printer and Book-seller, at the Sign of the Printing-press in Cornhil, near the Royal Exchange, 1662.

1668.—By Baldassar Timæus von Guldenklu: *Responsa medica et Dieteticon*. 4to. Lipsiæ.

1670.—By Dr. Culpeper: *Medicaments for the Poor; or, Physic for the Common People; also, Health for Rich and Poor by Diet*. 12mo.

By Antimus Conygius Plempius: *De Togatorum valetudine tuenda*. 4to. Brux.

1673.—By John Archer: *Every Man His Own Doctor, compleated with an Herbal; also of Food, Air, Exercise, Venery, the Senses, etc.* 2nd. ed.

1675.—By Bernhard Swalve: *Querela Ventriculi renovata*. 18mo. Amst.

1676.—There was pub.: *Sanctorius' Rules of Health, Englished by J. D.* Curious frontispiece of weighing chair.

1678.—There was pub.: *The Temperate Man, or Right Way of Preserving Life and Health, in three Treatises*. 18mo. This work included Lessius's *Hygiasticon*; Cornaro's *Temperate Life* (Herbert's), and A Paradox.

1680.—By Henricus Mundy: *Commentarii de Aere Vitali, de Esculentis, et de Potulentis*. 8vo. Oxoniæ.

Galenus: *Vita Medica, hoc est Galeni Methodus Sanitatis tuendæ, versione et commentariis illustratus a Casparo Hofmann; curante Sebast. Scheffero*. 4to. Francof.

1682.—George Hartmann: *The True Preserver and Restorer of Health, a collection of Remedies, with Directions for Cookery*. 12mo.

1683.—By Dr. Everard Maynwaringe: *The Method and Means of Enjoying Health, Vigor and Long Life*. 12mo.

1691.—Dr. Thomas Tryon: *The way to Health, Long Life, and Happiness; or, a Discourse on Temperance*. 2nd ed. 8vo.

1697.—Flamand: *Art of Preserving and Restoring Health*. Translated. 12mo.

1704.—*Essays on the Preservation and Recovery of Health*. [Thomas Curteis.]

By Robert Pitt: *The Antidote; or, Preservative of Health and Life, and the Restorative of Physick*. 12mo.

By Paulus Sismus: *Tractatus de Dieta*. 12mo. Hagæ. Com.

1710.—By Martinus Colerus: *Tractatus de Alimentis; præmissi sunt B. de Saxoferrato et J. B. Pontani eodem de re tractatus*. 4to. Coloniz.

1724.—Dr. Geo. Cheyne, M.D., pub. *Essay of Health and Long Life*. This speedily passed through several ed. and excited considerable attention. Several pamphlets were evoked. 1. (1725) *Epistle upon his Essay of Health, and Long Life, with Notes by Fillo-tisanus*. 8vo. 2. (1725) *Letter on the Danger of Laying down General Rules for Preserving and Restoring Health*. 3. See 1725.

In 1726 there was an ed. in Latin: *Tractatus de infirmorum Sanitate tuenda vitæque producenda*.

In 1739 he pub. an *Essay on Regimen*.

1725.—Dr. Edward Strother: *Essay on Sickness and Health*, wherein Dr. Cheyne's opinions in his *Essay* are noticed. This passed into a 2nd ed.

1731.—Dr. Edward Baynard: *Health*, a poem.

1732.—By John Arbuthnot: *Essay Concerning the Nature of Aliments; second ed., with Rules of Diet*.

1736.—A Dissertation by C. L. van Amsterdam: *Cibi potus et condimentorum consideratio*. 4to. Lugd. Bat.

1740.—*Health Restor'd, or the Triumph of Nature over Physick, Doctors, and Apothecaries, with an Essay on Regimen*. 3rd ed. 8vo.

1742.—There was pub.: *Hygiasticon; or Treatise of the Means of Health and Long Life; rendered into English by T. Smith; with Cornaro on a Sober Life*.

This is one of the many eds. of Lessius's works, which we shall notice more in detail under LONGEVITY.

Same year: *Cheap, Sure, and Ready Guide to Health; or a Cure for a Disease call'd the Doctor*. 2nd ed.

1744.—Dr. John Armstrong, M.D., pub.: *The Art of Preserving Health; a poem*. This work attracted attention, and gained considerable commendation. It estab. his fame. (See 1756.)

1746.—By Thomas Moufet [or Muffet, or Moffet]: *Health's Improvement; or Rules for Pre'aring Foods; enlarged by C. Bennet, with Life by Oldys, and Intro. by R. James*. 12mo.

1750.—There was pub. : *Health's Preservative: being a Dissertation on Diet, Air, and Down Beds; and the Cause and the Cure of Buggs.* 8vo.

1753.—By Geo. Cheyne : *Essay on Regimen, with Discourses on the Principles and Theory of Philosophical Medicine.* 3rd ed.

1760.—Dr. James Mackenzie : *The Hist. of Health, and Art of Preserving it.* 3rd ed.

1764.—Dr. John Fothergill : *Rules for the Preservation of Health.* 12mo.

1781.—By M. Aime Charles Lorry : *Essai sur les Alimens, pour servir de Commentaire aux Livres didactiques d'Hippocrate.* 2 vols. 12mo.

1784.—By J. Josephus Plenck : *Bromatologia seu Doctrina de Esculentis et Potulentis.* 8vo. Viennæ.

1786.—M. Pressavin pub. : *L'Art de prolonger le Vie, et de conserver la Santé.* 8vo. Lyon.

1787.—By James Makittich Adair : *Medical Cautions for Invalids: on Fashionable Diseases, Crowded Rooms, Mineral Waters, Quacks, and Lady Doctors; and Essay on Regimen.* 2nd ed. 8vo. Bath.

1790.—Gerard N. Heerkens : *De Valetudine Literatorum (Poema).* 12mo. Groningæ.

1791.—By Georg Gottlob Richter : *Præcepta Dietetica et Materia Alimentaria.* 12mo. Bernæ.

1794.—Dr. C. B. Faust : *Catechism of Health: trans. by J. H. Basse.* 12mo.

1795-6.—The Rev. Joseph Townsend [formerly a Physician] pub. : *Elements of Therapeutics; or, a Guide to Health.* A work consisting of cautions and directions, which passed through several eds., both here and in the U.S. 2 vols. 8vo.

1797.—There was pub. in Edin. : *The Catechism of Health; selected and translated from the German of Dr. Faust. Illustrated with Copperplates. Now first pub. for the use of the Inhabitants of Scotland, by the recommendation of Dr. Gregory.* This work was orig. pub. in Germany in 1792. The author was a physician of distinction.

An ed., with some slight alterations or add., was pub. in London in 1832 by Dr. Granville, and was treated with some severity in the *Quarterly Review* of July that year.

1798.—Malthus, in his well-known work on *Pop.*, first pub. this year, lays down this proposition : "It will be generally found true that the increasing healthiness of a country will not only diminish the proportion of deaths, but the proportion of births and marriages." This has led to much controversy. It cannot be said to be entirely untrue; but the causes are too recalcitrant to be discussed here.—See DEATH-RATE; DEATHS AS A MEASURE OF THE POP.

1800.—By Dr. A. F. M. Willich : *Lectures on Diet and Regimen.* 8vo.

1802.—Thomas Beddoes, M.D. : *Hygiæ; or Essays Moral and Medical on the Personal State of our Middling and Affluent Classes.* 3 vols. 8vo. Bristol.

1805.—By Karl Friedrich Burdach : *Die Diätetik für Gesunde.* 8vo. Leipzig.

1806.—By Joannes F. L. Albrecht : *Commentatio de iis Alimentis et Medicaminibus quibus ingressus in systema vasorum sanguiferorum aut concessus a natura aut negatis sit.* 4to. Gottingæ.

By Herr D. J. T. L. Danz : *Versuch einer allgemeinen Geschichte der menschlichen Nahrungsmittel.* Vol. I. 12mo. Leipzig.

1807.—Sir John Sinclair, Bart., pub. : *The Code of Health and Longevity; or, a General View of the Rules and Principles calculated for the Preservation of Health, and the Attainment of Long Life.* (4 vols. Edin.) This work passed through many eds. It treats in great detail of the advantages to be derived from an attention to rules connected with the subjects of health and longevity. [LONGEVITY.]

1818.—By James Johnson, M.D. : *On the Influence of Civil Life, Sedentary Habits, and Intellectual Refinement on Health and Happiness.* He also pub. other works on similar subjects. (See 1836.)

Annals of Health and Long Life; with Obs. on Regimen, Diet, etc., etc. Joseph Taylor. 12mo. pp. 142.

1822.—By Wm. Kitchiner, M.D. : *The Art of Invigorating and Prolonging Life by Food, Clothes, Air, Exercise, Wine, Sleep, etc.; or, the Invalid's Oracle, containing Peptic Precepts to Prevent Indigestion, etc.* 6th ed. 1828.

In *Select Dissertations on Several Subjects of Medical Science*, first pub. this year by Sir Gilbert Blane, M.D., etc., etc., there was contained (Dissertation V.) "Remarks upon the Progressive Health and Pop. of England," from which we quote in various parts of this work.

1824.—By J. H. Thackrah : *Lectures on Digestion and Diet.*

1825.—By Carl L. Klose : *Grundsätze der allgemeinen Diätetik.* 8vo. Leipzig.

1826.—By John Aytton Paris, M.D. : *Treatise on Diet, and the Prevention and Cure of Diseases of the Digestive Functions.* 8vo.

1827.—There was pub. [2nd ed.] "by a Physician": *Sure Methods of Improving Health and Prolonging Life; or, a Treatise on the Art of Living Long and Comfortably by Regulating the Diet and Regimen, embracing all the most improved Principles of Health and Longevity, and exhibiting the remarkable power of Proper Food, Wine, Air, Exercise, Sleep, etc., in the Cure of Chronic Diseases, as well as in the Preservation of Health, and Prolongation of Life. To which is added the Art of Training for Health; Rules for*

Reducing Corpulence, and Maxims of Health, for the Bilious and Nervous, the Consumptive Men of Letters, and People of Fashion. Illustrated by Cases. There was another ed. in 1829.

1834.—Dr. Andrew Combe pub. in Edinburgh: *Principles of Physiology applied to the Preservation of Health, and to the Improvement of Physical and Mental Education.* 8vo. From 1834 to 1841 there were sold in Europe 14,000 copies of this work, and in the U.S. 3000. Many later eds. were pub. The 14th in 1852.

1835.—There was pub. by Dr. Southwood Smith, the first ed. of: *The Philosophy of Health; or an Exposition of the Physiological and Sanitary Conditions conducive to Human Longevity and Happiness.* This is a work which has engaged more attention than any of the preceding, and has had an influence upon the present generation. The 11th ed., "revised and enlarged," pub. 1865.

By Dr. Robley Dunglison, M.D. (Philadelphia): *On the Influence of Atmosphere and Locality, Change of Air, Seasons, Food, Sleep, etc., on Human Health, constituting Elements of Hygiene.* 8vo. (See 1844.)

1836.—There was pub. by Mr. J. B. Davis, surgeon: *A Popular Manual of the Art of Preserving Health; embracing the subjects of Diet, Air, Exercise, Gymnastics, General and Physical Education, Occupation, Bathing, Clothing, Ventilation, etc., etc. Designed for the Use of all Ranks and Professions in Society.* A thoughtfully written work, far above the average of its class.

Same year, there was published by James Johnson, M.D., *Economy of Health, or the Stream of Human Life from the Cradle to the Grave; with Reflections Moral, Physical, and Philosophical on the Septennial Phases of Human Existence.* This is a well-written work which passed through several eds. (See 1818.)

1837.—There was pub. by Edward Johnson, M.D.: *Life, Health, and Disease.* A work of the highest character. It has passed through a great number of eds. The 12th thousand was pub. in 1849.

Same year there was pub. by John Harrison Curtis, a member of the medical profession: *Simplicity of Living: Obs. on the Preservation of Health in Infancy, Youth, Manhood, and Age: with the best means of Improving the Moral and Physical Condition of Man, Prolonging Life, and Promoting Human Happiness.* A practical work. 3rd ed. 1839.

1838.—Mr. Joel Pinney pub.: *The Alternative: Disease and Premature Death; or Health and Long Life; being an Exposure of the Prevailing Misconception of their respective Sources, and showing what is, and what is not, according to those Laxus which alone can insure Sound Health and Length of Life.* This is a thoughtfully written work.

Same year, Sir Anthony Carlisle pub.: *Practical Obs. on the Preservation of Health and the Prevention of Diseases.*

And Dr. Robt. Dick pub.: *Diet and Regimen, Physical, Intellectual, and Moral, as a Means in the Prevention and Cure of Disease.* 8vo. Glasgow.

And by Dr. Herbert Mayo: *The Philosophy of Living.* 2nd ed. 8vo.

1838-9.—By Herr J. F. M. Heyfelder: *Studien im Gebiete der Heilwissenschaft.* 2 vols. Stutt.

1841.—Mons. L. C. Motard: *Essai d'Hygiène générale.* 2 vols. 8vo. Paris. (See 1868.)

By Dr. Thomas Hodgkin: *The Means of Promoting and Preserving Health.* 2nd ed. 12mo.

1842.—By Matthew Truman: *Food, and its Influence on Health and Disease; with Rules for the Preservation of Health.* 8vo.

1843.—By Dr. Jonathan Pereira: *Treatise on Food and Diet.*

1844.—There was pub. in Philadelphia by Robley Dunglison, M.D.: *Human Health; or, the Influence of Atmosphere and Locality, Change of Air and Climate, Seasons, Food, Clothing, Bathing and Mineral Springs, Exercise, Sleep, Corporeal and Intellectual Pursuits, etc., etc., on Healthy Man; Constituting Elements of Hygiene.* "A new ed., with many modifications and additions."

1844-69.—Mons. Michel Lévy: *Traité d'Hygiène publique et privée.* 2 vols. 8vo. Paris. (See 1869.)

1845.—Mons J. H. Reveillé-Parise: *Etudes de l'Homme dans l'état de Santé et dans l'état de Maladie.* Deuxième ed. 2 vols. 8vo. Paris.

There was pub. in the U.S. by Amara Brigham, M.D.: *Remarks on the Influence of Mental Cultivation and Mental Excitement upon Health.* (See 1864.)

1846.—By Charles Searle, M.D.: *The Why and the Wherefore; or, the Philosophy of Life, Health, and Disease; new and orig. Views explanatory of their Nature, Causes, and Connexion.*

By Dr. John C. Warren, Boston, U.S.: *Physical Education and the Preservation of Health.* 12mo.

1847-8.—By W. H. Robertson, M.D.: *Treatise on Diet and Regimen.* 4th ed., re-written and enlarged.

1848.—There was pub.: *The Principle of Health Transferable; or, How to Obtain Immediate Relief from Pain, and a Speedy Cure in Disease.* 12mo. [MESMERISM.]

Also, by Dr. Jacob Moleschott: *Die Physiologie der Nahrungsmittel, ein Handbuch der Diätetik.* 8vo. Darmstadt. (See 1858.)

1851.—Dr. Lionel J. Beale : *The Laws of Health in Relation to Mind and Body*. 8vo.

1855.—There was pub. by E. Eppe : *Practical Obs. on Health and Long Life*.

Also, by Harry William Lobb, L.S.A. : *Hygiene ; or, the Handbook of Health*. The first part treated of public, the second of personal, health. And *The Science of Life ; or, How to Live, and What to Live for ; with ample Rules for Diet, Regimen, and Self-Management ; together with Instructions for Securing Health, Longevity, and that Sterling Happiness only attainable through the judicious Observance of a well-regulated Course of Life*. By a Physician.

1858.—James H. Pickford, M.D. : *Hygiene ; or, Health, as Depending upon the Conditions of the Atmosphere, Foods and Drinks, Motion and Rest, Sleep and Wakefulness, Secretions, Excretions, and Retentions, Mental Emotions, Clothing, Bathing, etc.*

Also, by Dr. Jacob Moleschott : *De l'Alimentation et du Régime ; traduit par Ferdinand Flocon*. 12mo. Paris.

1859.—Dr. Ferdinand Hauska : *Compendium der Gesundheits-Polizei*. 8vo. Wien.

1860.—By Dr. C. Searle : *The Science of Life, Health and Disease*. 8vo.

Mons. F. Ribes : *Traité d'Hygiène Thérapeutique, ou Application des Moyens de l'Hygiène, ou Traitement des Malades*. 8vo. Paris.

By Oscar Wislicenus : *Entwicklung eines Wahrhaft physiologischen Heilverfahrens*. 8vo. Leipzig.

1861.—There was pub. by Edward Smith, M.D., LL.B., F.R.S. : *Health and Disease as Influenced by the Daily, Seasonal, and other Cyclical Changes in the Human System*. A work of a high order of merit, based for the most part upon actual experiments of the effect of food upon the human system.

This same author had, in 1860, contributed to the "Dublin Quarterly Journ." a paper : *Practical Deductions from an Experimental Inquiry into the Influence of Food*.

Dr. Wm. Brinton pub. a little book : *On Food and its Digestion, being an Intro. to Dietetics*. 8vo.

Mons. J. B. Fonssagrives pub. : *Hygiène Alimentaire des Malades, des Convalescents et des Valéudinaires, ou du régime envisagé comme moyen thérapeutique*. 8vo. Paris.

1863.—At the Social Science Congress (Edinburgh) this year, the Rev. Dawson Burns read a paper : *The Effect of Alcoholic Liquors upon Health, as Illustrated by the Experience of the British Army in India* ; wherein it was shown, upon the authority of the "Rep. of the Commissioners on the Sanitary Condition of the Indian Army," that the use of spirituous liquors is highly detrimental to the soldier's health in India, and is one of the chief causes which injures him physically and morally ; and that abstinence from spirits has always been attended by greatly improved health, even under circumstances otherwise unfavourable. [INDIA.] [INTEMPERANCE.]

On the same occasion attention was drawn to the serious consequences to health resulting from the use of "Diseased Meat" as food. [FOOD.]

There was also a paper by Dr. Ogle : *Medical Reform, or Prevention better than Cure* ; wherein he contended that in the place of the present system of paying the medical attendant for cures, he should be paid a standing fee or retainer for keeping his patients in health. [MEDICAL ATTENDANCE.]

1864.—At the Social Science Congress (York) there were various papers read of great interest from a health point of view, viz. 1. *What is the Influence on Health of the Overcrowding of Dwelling-Houses and Workshops, and by what Means could such Overcrowding be Prevented?* [HOUSES.] [OCCUPATIONS.] 2. *On the Influence of Occupation and Age on the Health of those Engaged in some of the Common Manual Employments, etc.* [OCCUPATIONS.] 3. *On the Prevalent Causes of Rejection of Recruits enlisted in the West Riding and Northern District*. [HEALTH, STANDARD OF.] 4. *The Health of Women ; especially of American Women*. The author considered that the three causes which operated most potently to destroy or deteriorate the health of women, or to prevent them from attaining that high degree of vitality and strength which the Creator designed they should enjoy, were (a) want of sufficient fresh air to breathe, consequent upon their confinement within imperfectly ventilated houses ; (b) want of sufficient exercise in the open air and sunlight ; (c) improprieties in dress, such as tight or close-fitting waists, restraining the free action of the lungs, heart, and arms ; and the unequal—the insufficient and superfluous—covering of the different parts of the system.

There was pub. : *Mental Exertion in Relation to Health*, by Amariah Brigham, M.D., edited, "with a Chapter on the Cause and Treatment of Indigestion in Literary Men," by Arthur Leared, M.D. (See 1845.)

By Dr. Horace Dobell : *Manual of Diet and Regimen for Physician and Patient*. 8vo.

1865.—At the Social Science Congress (Sheffield), this year, there were various papers on Health subjects ; especially one by John Edward Morgan, M.A., M.D., Oxon, on *The Danger of Deterioration of Race from the Too Rapid Increase of Great Cities*, which will be considered under HUMAN RACE, DETERIORATION OF ; and also under TOWN LIFE.

There was pub. by Mons. Ch. Daremberg : *La Médecine dans Homère, ou Etudes d'Archéologie sur les Médecins, l'Anatomie, la Physiologie, la Chirurgie et la Médecine dans les Poèmes Homériques*. 8vo. Paris.

1868.—By Charles A. Cameron : *Lectures on the Preservation of Health*. 8vo.
By Mons. L. C. Motard : *Traité d'Hygiène générale* (nouvelle ed.). 2 vols. Paris. (See 1841.)

Herr Edward Reich : *Die Hygiene und ihr Studium [System der Hygiene, Einleitung]*. 8vo. Erlangen.

1869.—Mons. Michel Lévy : *Traité d'Hygiène publique et privée*. 5th ed. 8vo. 2 vols. Paris. (See 1844.)

1872.—There was pub.: *Human Physiology, the Basis of Sanitary and Social Science*. By T. L. Nichols, M.D.; a work wherein the principles of health are treated with much earnestness and in a philosophic spirit.

He derives the term health from the Saxon *whole*, akin to *holy* and to *heal*: hence to heal is to make whole or holy. Health or wholeness, completeness, perfection of body and mind, corresponds to holiness, wholeness, and purity of heart. It means completeness and perfection of organization, fullness of life, freedom of action, purity from all stain or corruption, harmony of functions—"a sound mind in a sound body"; and he expands the idea thus (pp. 321-2):

Health is a condition of perfect development—the wholeness of the harmonious growth and adaptation of part to part, organ to organ, where none are stunted and none in excess. In this we have the perfection of symmetry and beauty, which are merely the result of wholeness or health. For it can be shown that the form and proportions of man and of every animal which are the most useful are the most beautiful? When every bone is of the best form and size, there is perfect proportion; when every muscle has its proper development, with just enough of fat in the cellular tissue, we have the highest beauty of form; when the texture of the skin is finest, the circulation most vigorous, the blood most pure, we have the glow and charm of the finest complexion. Beauty is therefore more than a sign of health: it is its expression: and perfect beauty can only come of perfect health. Partial beauty, fading beauty, decaying beauty there may be, with partial, fading, decaying health; but it is unsatisfactory and painful. The artist and poet imagine beauty glowing with health, and cannot separate these ideas. No painter or sculptor would represent a Venus, a Diana, a Hebe, other than as in the perfection of health, and therefore beautiful and glowing with life.

He also elaborates another view which in some degree revives the old notion of the "healing art," and "laying on of hands" (p. 151):

A strong healthy man, full of the vigour of life, diffuses an atmosphere of health around him. His presence is a spring of life. The touch of his hand has an invigorating power. If he is friendly and sympathetic, and has a will as well as a power to help others, his influence is very marked. Physicians who have a vocation of healing the sick are successful, whatever their mode of practice. Allopathy or homoeopathy, large doses or small doses, benefit the patient if only administered by a doctor in whom he has confidence—and this confidence is the perception of relief. One doctor can do more with a look, a smile, a tone of voice, an encouraging word, with the communication of the subtle aroma of life to a patient, than another with any amount of medical science and skill. What is called mesmerism, or animal magnetism, is merely the conscious and definite voluntary direction of this life force to a special end.

This work is referred to under various titles in these pages.

1873.—By Geo. Wilson : *A Handbook of Hygiene*. 8vo.

1874.—By Dr. Fredk. W. Pavy : *Treatise on Food and Dietetics, Physiologically and Therapeutically considered*. 8vo.

1875.—By Dr. Thos. King Chambers : *A Manual of Diet in Health and Disease*. 12mo. 2nd ed. 1876.

By Herr G. A. Lauer : *Gesundheit, Krankheit, Tod*. 8vo. Berlin.

1876.—A very decided step in advance was taken this year. Under the auspices of the National Health So., a course of 20 Lectures was appointed to be delivered by Dr. Corfield of University College. Among the subjects selected were ventilation, water supply, drainage, foods and drinks, unhealthy employments, the prevention of disease, and the care of personal health at the several stages of life. The lectures were intended for men and women of all classes, and they aimed at giving practical insight into the condition on which health depends in the home and in the town. The subjects were treated very simply, requiring no previous knowledge of the sciences involved. Special arrangements were made for the admission of working men and women at a very low charge.

During this year also Dr. W. B. Richardson, under arrangements made by the Trustees of the Gilchrist Education Trust, commenced a series of ten lectures on Human Physiology addressed to the teachers of the primary schools of the metropolis, in view of bringing prominently forward the various applications of physiological knowledge to the wants of life. One of the most instructive Lectures of this series was designated "Learning and Health." The two should go hand in hand.

Hence, after centuries of writing, the practical work of teaching had commenced.

1877.—During this year the question of "Health as affected by Civilization" engaged some attention on each side of the Atlantic. It is sufficient for our present purposes to draw attention to an article in the *Fortnightly Review* (Oct. 1) by Dr J. H. Bridges hereon; and one passage will indicate its drift:

Out of many aspects of the subject which might be dwelt on, I would draw attention specially to the two ways in which health is affected by civilization: namely, first that the body is acted upon by a more active, more excitable, and more complicated brain; secondly, that there is a more complicated and more stimulating social environment. All this comes to the same thing as saying that there is *more life*: for life consists in the adjustment of the interactions of organism and environment. Where there is more of these interactions there is more life. Where the adjustment of these interactions goes on harmoniously and without shock there is health. And since a compli-

cated system is more difficult to maintain in working than a simple system . . . we may infer that, though health in civilization may be more perfect, it most assuredly is more difficult, than health in savagery.

1878.—The *Sanitary Record* asserted—and we believe quite truly—that on an average one-half the number of out-patients treated by a hospital surgeon *suffer from diseases due primarily to a want of knowledge of the laws of health and cleanliness*. The ignorance of hygienic laws, which affects so disastrously the health of the rich as well as the poor, exists chiefly in regard to dress, ablution, and ventilation. This statement (the writer admitted) might at first appear startling, but an enumeration of the diseases that can be constantly traced to the above causes will show upon how sound a basis the statement rests. The following are examples: Varicose ulcers, from dress; skin diseases, from want of cleanliness; chest diseases and fevers, from defective ventilation.

A series of *Health Primers* to consist of 20 small vols. was commenced to be pub. by Messrs. Hardwicke and Bogue. It consists of separate treatises on "The Heart and its Functions," "The Head and its Troubles," etc., etc., each written by a competent authority.

1880.—There was published by Geo. Wilson, M.D., *Healthy Life and Healthy Dwellings*. This is one of the best-designed works on the subjects of which it treats we have yet seen. It is precisely what is required: giving advice in a plain and simple manner concerning food, clothing, and dwellings; each chapter forming a separate essay, reasonably exhaustive.

In other parts of Europe, more especially in Germany, practical questions regarding health are receiving elucidation. The most recent deliverance is by Prof. Jaeger of Stuttgart, and treats of "clothing in relation to health." He recommends a so-called normal clothing, which (1) consists exclusively of wool, and (2) is specially arranged to keep warm the middle line of the front of the body. The general object is to prevent accumulation of fat and water in the system; the author's leading principle being, that the greater the specific gravity of the human body the more it is able to resist epidemic diseases. To the well-known properties of wool, as regards moisture and heat, Professor Jaeger makes a curious addition. He claims to prove that in our organism there are certain gaseous volatile substances—*Duftstoffe* (odorous substances)—which are continually being liberated in the acts of breathing and perspiring, and have important relations to mental states. Two distinct groups appear, those viz. of *Lust* and *Unlust Stoffe* (substances of pleasure and disliking); the former are exhaled during a joyful and pleasant state of mind, and produce this state with heightened vitality if inhaled. Of the latter the reverse is true. It may be readily verified that during joy and happiness the odour of perspiration is not disagreeable, while during anguish and great nervous excitement it is offensive. The substances of disliking have therefore a bad odour; and in an atmosphere of them the vitality is lowered; hence, in a state of anguish and fear the body is more susceptible to contagious diseases. The Professor contends that sheep's wool attracts the "substances of pleasure" (and this is distinct from its great odour-absorbing capacity in general), while clothing made of plant-fibre favours the accumulation of the offensive substances of dislike with their evil consequences. A large amount of experimental evidence is adduced in support of these views. The experience of the many persons who have adopted his normal clothing, both for summer and for winter, is stated to be very satisfactory.

The preceding is but a feeble outline of one of the vital branches of our inquiry, which more or less underlies and interlaces itself with all that belongs to Life, and some other branches of INS.—See DEATHS; DISEASES; FOOD; HABITS; HOSPITALS; HOUSES; HUMAN BODY; HYGIENE; INFECTIOUS DISEASES; INTEMPERANCE; LIFE, HUMAN; LOCALITY; LONGEVITY; MARRIAGE; MEDICAL SCIENCE; MELANCHOLY; OCCUPATIONS; PLAGUE; PREVENTIBLE DISEASES; PUBLIC HEALTH; RAIN; V. STATIS.

HEALTH, BOARD OF.—First estab. in Gt. Brit. in 1831. See PUBLIC HEALTH.

HEALTH, CERTIFICATE OF.—The practice in the U.S. in regard to the revival of lapsed Life pol. is usually to require a CERTIFICATE OF HEALTH in the stead of the Declaration of Health in the U.K. [HEALTH, DECLARATION OF.]

HEALTH, CHANGE OF.—Under the contract of Accident Ins. it is usually a stipulation that in the event of any material change in the health (or occupation) of the insured, due notice thereof shall be given to the Co. The force and justice of which stipulation is apparent in regard to a contract annually renewable by option on either side.

In Life Ins. the circumstances are different. The contract is for the duration of life, provided the essential stipulations regarding payment of the prem. and the non-transgression of the limits of residence and travel be observed. But still occasions do arise, when any change of health may and should be regarded. These are (1) when the insurance is not completed within say three months after the orig. acceptance of the life; (2) when the pol. lapses by reason of non-payment of renewal prem. within the stipulated time. In the latter case a re-examination of the life is usual (at the expense of the insured), in view of ascertaining if the life be still in good health; but sometimes a simple Declaration of Health is accepted instead. [HEALTH, DECLARATION OF.]

In the case of insurances not completed within the time prescribed by the regulations

of the Co., steps should be taken to ascertain the condition of health, or the fact of any change of health before completion. The agent has usually an interest in pressing forward the transaction at any of its stages.

There is an important legal decision on the points here involved rendered in the Court of Appeals, N.Y., in 1872—*Fried v. Royal Ins. Co.*, wherein the short facts were as follow: The contract, in the form of a preliminary acceptance of the application for ins. [PRELIMINARY ACCEPTANCE OF LIFE PROPOSAL] by the plt. on the life of her husband; for which she advanced the usual prem. for one year. The defts. by their agent agreed that if the proposal was accepted at their head office in Liverpool, they would issue a pol. in accordance therewith; but if rejected that they would return the prem.; and that if the nominee should die before the decision of the head office was received, the amount of the ins. should be paid. The defts. accepted the proposal, and forwarded a pol. to their agent, to be countersigned and delivered. It was completed by the agent, but, on the ground of an unfavourable change in the health of the nominee, was never delivered. The standing instructions of the Co. to the agent were that if it should come to his knowledge that any change had taken place in the health of the life proposed, between the date of the proposal and the receipt of the pol., he should not deliver it until he had communicated with the Co. These instructions were not brought to the notice of the plt. *Held*—1. That the acceptance by the defts. of the proposal contained in the contract made by their agent is conclusive of their assent to his authority to make the precise contract he did make, and that the acceptance of the Co. was absolute, and not qualified by the general instructions to the agent. Such instructions could not alter or qualify the terms of the contract to the prejudice of the plt. It is a familiar principle that private instructions to an agent will not affect third persons. 2. Also that the contract of ins. was to take effect from the date of the proposal. If accepted, the risk of an unfavourable change of health, after that time, was necessarily assumed by the Co.

The difficulty here presented might be got over by modifying the conditions of the preliminary acceptance; or possibly by an explanatory statement in the prosp.

A still later case was before the U.S. Courts in 1873:—*Schwartz v. Germania Life Ins. Co.* (2 *Ins. Law Jour.* 482):

The plaintiff applied to the Co. for ins. on the life of her husband. The application [proposal] stated that the present state of the husband's *health was good*; that he had never been afflicted with serious illness; and in answer to a question, stated that the plt. was aware that the contract of insurance became valid only by the payment of the first prem.; and closed with a provision, among other things, that the pol. should not become binding until the amount of prem. as therein stated should be received by the Co. or some authorized agent thereof, during the lifetime of the party insured.

The Co. accepted the application, and one pol. having been sent and refused, a second was forwarded to the agent and received by him Oct. 25. On the 13th Oct. the husband was seized with a dangerous illness, of which he died on the 29th of the same month. On the day that the pol. was received by the agent, and after its receipt, the plt. called upon the agent, tendered the prem. and demanded the pol., which the agent refused to deliver on account of the husband's sickness.

The pol. provided that the first prem. should be paid in hand, and the others annually, and that it was accepted on the express condition that it should be of no effect if the prem. or any of them were not paid on or before the several days thereinbefore mentioned, *or within 3 days thereof*. A note at the foot of the pol. stated that the agents of the Co. were not authorized to make, alter or discharge, contracts, or waive forfeitures. There was evidence tending to show that the Co.'s instructions to the agent were to deliver pol. on payment of the prem., *provided the person whose life was to be insured was in health at the time of delivery*. There was no evidence that these instructions were known to the plt.

Held :—1. That if the agent "had no authority, discretion or duty in the premises, save only to deliver the pol. upon payment of the first prem., then we can see no good reason why the transmission of the pol. to him might not be regarded as a signifying by the deft. of its acceptance of plts. proposition, nor any good reason why payment or tender of the first prem. to such agent, even if delivery of the pol. was withheld, would not have been completely effectual to entitle the plt. to the full benefits of the pol., to the same extent as if it had been manually and unconditionally delivered."

2. That it was "competent for the defendant to transmit its pol. to its legal agent with instructions general or special, to deliver the same to the plt. upon payment of the first prem., *provided her husband was in good health at the time of such delivery*, and in such case the transmission of the pol. to the agent would go no further than to signify the defts. acceptance of the plts. proposition, on condition that her husband was in good health."

3. That the statements in the application as to the health and physical condition of the party "had reference to the state of facts existing or which had existed at the date of the application, not to any which might occur subsequently to such date." Also

4. That it was not necessary for the plt. to bring the amount tendered into Court, as the deft. could receive it as a deduction from any amount the plt. might recover.

In the further case of *Whitley v. Piedmont and Arlington Life Ins. Co.*, before the American Courts in 1875, the facts were these: The application [proposal] provided that the ins. should not be binding until the prem. was received by the Co. or its authorized agent, and binding the Co. to pay the prem. as soon as the pol. was issued. *Held*:—1. that the contract was consummated when the prem. was handed to the *Express Co.* for transmission to the agent according to his instructions. 2. That the representation as to *Health* in the application was a continuing one up to consummation of the contract. *It was the duty of the insured to communicate any material change of health in the interval.* In the absence of such communication a material change of health will avoid the pol., but the prem. may be recovered on the ground that as the risk never accrued there was an absence of consideration. (*Ins. Law Jour.* iv. 403.)

In the American case of *Day v. Mutual Benefit Life* (1875) the facts were these: The prem. was not paid when due. Subsequently the pol. was reinstated upon application of the insured, who furnished his own certificate together with that of the Co.'s examining physician, that he was in good health. The renewal receipt was delivered two weeks later. *Held*, that the insured was not obliged to furnish any further statements as to the variation of his health between the time of applying for renewal and the delivery of the renewal receipt. (*Ins. Law Jour.* iv. 642.)

The case of *Mutual Benefit Life v. Higgenbotham* (1878) was of a similar purport. (*Ins. Law Jour.* vii. 326.) [CONSUMMATION OF CONTRACT.] [DELIVERY OF POL.] **HEALTH, CONDITION OF.**—The normal requirement in Life, Health, Accident, and other branches of Ins. relating to human life is that the person proposed for ins. shall be in good health; and any variation from this standard is to be fully disclosed. What is understood by good health in a medical sense has been considered under **HEALTH**; and in a legal sense under **GOOD HEALTH**. [HEALTHY LIFE.]

There are other conditions of health under which ins. is possible. These have been considered under **DISEASED AND IMPAIRED LIVES**.

In practice other cases and considerations arise altogether differing from any previously considered. Some of these we now proceed to notice.

It has been often contended that inasmuch as Life Offices charge an extra prem. for any deviation from the standard of health [STANDARD OF HEALTH], they ought, as a rational consequence, to grant annuities on more favourable terms to persons whose lives were below the standard required for Life Ins.; and one or two young Cos. have announced their intention of meeting this proposition; but it has never become in any degree general. See *General Accident and Compensation Co.* for an extreme case.

1826.—In *Ex parte Fisher* in the matter of *Bradley*, it was held in Chancery that in valuing an *Annu.* for proof under a commission in bankruptcy, the Commissioners, since the 6 Geo. IV. c. 16, s. 54, could not enter into a consideration of the altered state of the health of the annuitant.—See **BANKRUPTCY**, sub-heading *Annuities*.

1841.—In the English case of *Jones v. Keene*, the short facts were these: The plts. were assignees and held a pol for £999 upon the life of the bankrupt as part of his assets. They offered it for sale, but no purchaser could be found. The bankrupt became suddenly ill, and the defendant and his attorney procured the assignee to sell it to the defts. for sixty guineas, without informing the assignee of the bankrupt's extreme illness. *Held*, that the defts. conduct amounted to a legal fraud, for which he could not set up any legal title to the pol. Cases cited: *Hill v. Gray* (1 Starkie, 434); *Turner v. Harvey* (1 Jack., 169). [2 Moody and Rob., 348.]

1870.—In what is known as *Bell's case*, in the winding up of the *Albert Ins. Co.* [before the Arbitration, concerning which see later], it was held, by V. C. James, that the rule to be followed in estimating the value of a current pol. in a Life Office in course of liq., in estimating the measure of proof, was this: Select another Co. of perfectly solvent reputation, with prems. the same as those of the Co. in liq.; find for what prem. that Co. would now insure the life: *the person whose life is insured to be at liberty to show that his state of health is such that the new Co. would require a higher prem. than that which would have been required merely from the lapse of years;* and then having ascertained the increased prem., take the difference between the two prems. and capitalize that difference. having regard to the expectancy of the life in question. [PROOF, MEASURE OF.] (See 1871 and 1872.)

1871.—In *Lancaster's case* (No. 2), under *Albert Arbitration*, Lord Cairns departed entirely from the principle laid down in *Bell's case*—holding specifically that in no case was there to be a re-examination of the life insured. The learned Arbitrator appeared to be of opinion that it was incapable of being satisfactorily provided for, more particularly in the case of lives resident abroad.

1872.—In *Holditch's case*, arising out of the winding up of the *English Ins. Co.*, the Master of the Rolls (Lord Romilly) in an elaborate judgment followed the ruling in *Bell's case*, and rejected that in *Lancaster's case*. His reason being that Lord Cairns excluded from consideration the important element of the altered condition of health.

These several judgments will be considered in more detail under **PROOF, MEASURE OF. HEALTH BY CONTRACT.**—Under title **CONTRACTS FOR REDUCTION OF SICKNESS AND MORT.**, we have given an outline of experiments in Paris in view of reducing the death-

rate; also for remedying the great mort. which formerly prevailed in the transport of convicts to penal settlements.

The proposals of various medical attendance associations is in the same direction, viz. to provide contracts with medical practitioners to keep the members and their families in health, instead of simply being called on to effect cures as now. [MEDICAL ATTENDANCE ASSO.]

HEALTH, DECLARATION OF.—In the case of Life or Health Ins. pol. lapsing by reason of non-payment of prem., it is the custom before reviving the pol. to require a Declaration of Health to be made by the life insured, or, in the case of assigned pol., by the assignee. If this declaration be not in all respects satisfactory, a medical re-examination is usually insisted upon, at the expense of the insured, or the assignee; and if the condition of health be unsatisfactory, the pol. need not be renewed.

All this is governed and modified by the regulations of each particular Co., as set forth in its contract (pol.) and in its prosp. from time to time.

HEALTH AND GENERAL BENEFIT LIFE ASSU. AND LOAN SO.—An Asso. under this title was existing in Lond. in 1846, Mr. J. Brydie being the Secretary. How it was constituted and what was its fate we cannot learn.

HEALTH, GOOD.—See GOOD HEALTH; HEALTH, STANDARD OF.

HEALTH, INJURY TO; LEGAL REMEDIES.—Injuries affecting a person's health for which an action will lie for damages mostly fall under the following heads: Where, by the unwholesome practices of another, a man sustains any damage in his vigour or constitution: as by selling him bad provisions or wine; by the exercise of a noisome trade, which infects the air in his neighbourhood; or the neglect or unskilful management of a surgeon attending him. Under the Public Health and Adulteration of Food Acts, a number of statutable offences have been defined punishable with fine or imprisonment.

HEALTH INSURANCE.—It has been remarked as one of the wants which the practice of Ins. has not hitherto reached—that of making provision for the professional, literary, and trading classes against the contingency of being permanently disabled from following their usual avocations. The industrial classes are provided for in this regard to a considerable extent—not completely it is admitted—by means of Benefit or Friendly Sos.; to which the Poor Law stands supplementary. But those upon whom the blow of permanent sickness—in the sense of producing invalidity to pursue the usual occupation—falls with the greatest severity, have assumed themselves to be left without the means of any adequate provision. The facts hardly go to this extent, as will be seen by what follows: for various projects have been set on foot; but one of two things has nearly always happened—either the scheme has fallen as a dead letter; or where it has been taken up, there has been such a decided *selection against the office* as to render the results financially disastrous.

One of the chief difficulties in the way of rendering such a scheme general is unquestionably the want of data, as applicable to the classes proposed to be provided for. The rate of sickness amongst the industrial classes is now capable of fairly accurate measurement; although it is open to doubt whether the ratio of permanent disablement be fully understood even here. Such data as is available regarding these classes has been set forth in considerable detail under title FRIENDLY SOS., MORT. AND SICKNESS EXPERIENCE OF.

The data requisite for Health Ins. involves a combination of the rate of sickness with the rate of mort.: hence the incidents affecting each are constituted important factors. It may, for instance, happen (as an illustration) that occupations which tend to shorten life exercise no adverse influence upon Health Ins. Offices; whereas pursuits, or climates, which enfeeble the body, without necessarily destroying life, become of vital moment in this connexion.

1716.—There was founded the *Generous So. of Ins.*—a mutual Contribution Scheme, one of the features of which was entirely novel—viz. that of a fund for the Ins. of the Sick and the Lame, the art. of which were as follow:

- i. That they [*sic*] consist of 4400 subscribers.
- ii. That each member pay entrance 1s. and stamps, and 6d. p. week, and shall be entitled if they fall Sick or Lame (so as to be incapable of getting their Bread—that being the intention of this art.) to a Div. of £250 every month, if full, or proportionable; which Sickness and Lameness is to be inspected and reported to the Trustees, by two judicious persons appointed by the Trustees.
- iii. That those Subscribers of the first 1000 that shall receive no claims through the Enjoyment of their Health and Limbs, for one year, shall be entitled to £10 to put their Children out Apprentices, and 50s. to cloath them, regularly as they are number'd and enter'd, which said money shall be raised by a Discompt of 10 p.c. out of all claims; but if the person claiming shall have no children, or nominated none, shall have only £10, to be by him disposed for Charitable Uses, as he shall judge proper. 2. The sum of £110 p. month shall be disposed and kept as Stock, to increase the claim to 50 p.c. profit, etc.
- iv. That the same Trustees as are chosen for the So. or be deemed Trustees for this So. [section?]

v. That all persons that have any Claim must send to the Register within 30 days, or otherwise must be put to the next month.

vi. That no Claim be made till 200 are chosen, nor no money paid till notice given in the *Gazette* as on Lives.

vii. That each member of this So. have an equal vote in chusing of Trustees as those members and Lives.

viii. That all claims are paid within 6 weeks after 200 are subs. and entered.

ix. That the 5th, 6th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, and 18th art. of those on Lives shall be deemed as good and secure Art. of the So. for Sick and Lane, as if verbally expressed here, and as binding in the same manner.

We may give an example of the clauses thus incorp. into this part of the scheme, viz. :
xiv. That the Proposer Mr. Wm. Davis be the first and present Register [Registrar] to enjoy all the profits, etc., for ever to him, his Deputy, or Assigns, etc. . . . xviii. That each member, upon receiving his claim, is obliged to put in another Life, leaving three months pay in the Register's Hands for the encouragement of the So.

Prob. many other schemes of a like nature were set on foot during the last century, of which no details are preserved; and some will have been included in our historical review of FRIENDLY SOS.

1820.—There was founded the *General Benefit Co.*—a superior order of Benefit So. with a subs. cap.—the object of which was to introduce a branch of Health Ins. We have already given full details of its scheme under title FRIENDLY SOS., 1825, when this branch of its operations had become more fully developed.

1826.—Mr. Edw. D. Allison pub. in Edin. a pamph. : *Obs. on the Expediency of Instituting a Friendly Asso. of the Medical Profession throughout Scotland, for Insuring a Provision during Sickness and Old Age, Widows Assu., Endow. for Children, etc.* In the same or the following year, there was founded as the result : *The Medical Provident Inst. of Scotland*, which embodied the following :

T. showing the Rates both in Single and Ann. Payments required for Assuring £1 p. week during professional incapacity till 60, with an Annu. of £26 for Life after 60; and £26 more payable within 3 months after death :

Age.	Single Payment.	Ann. Prem.	Age.	Single Payment.	Ann. Prem.
	£ s. d.	£ s. d.		£ s. d.	£ s. d.
21	48 17 3	2 16 4	36	88 2 3	6 7 0
22	50 11 0	2 18 10	37	91 16 2	6 15 4
23	52 6 9	3 1 7	38	95 15 6	7 4 8
24	54 4 6	3 4 6	39	100 0 5	7 14 10
25	56 7 5	3 7 10	40	105 0 6	8 7 0
26	58 12 6	3 11 5	41	110 5 4	9 0 3
27	61 0 4	3 15 3	42	115 16 0	9 15 4
28	63 10 3	3 19 6	43	121 12 8	10 12 1
29	66 2 11	4 4 0	44	127 4 1	11 9 10
30	68 17 0	4 8 10	45	133 1 5	12 10 2
31	71 15 5	4 14 1	46	139 8 9	13 13 5
32	74 17 6	4 19 11	47	146 0 9	14 19 9
33	77 19 6	5 5 11	48	153 1 1	16 10 6
34	81 3 8	5 12 4	49	160 8 8	18 6 6
35	84 10 7	5 19 4	50	168 3 7	20 9 2

Example.—A person of the age of 25, by the payment of £56 7s. 6d. in one sum, or of £3 7s. 10d. ann. till he attained the age of 60, was to be entitled to the following benefits : 1. £1 p. week while incapacitated by sickness or other personal disability from following his profession, subject to the limitations specified in certain conditions annexed. [The member was not to be entitled to claim until after 2 years of membership—subsequently made 5 years; nor for more than 2 years in all—after which, if disability continued, annuity was to commence.] 2. The annuity was to commence at 60 (or before) to be payable half-yearly. 3. A half-year's annu. to be paid within 3 months after death.

1829.—There was founded the *Clergy Mut. Assu. So.*, which embodied a scheme of Health Ins. for its members being clergymen of the United Church of England and Ireland. A fair amount of bus. was obtained; and one of the first lessons learned from it was that the rates originally charged were not nearly sufficient; and they have been, on two occasions at least, increased.

The regulations for the conduct of this branch have already been set out in detail in our hist. of the So. The maximum annuity allowed in case of sickness is £104—being £2 p. week p.a.; and this is continued in the case of permanent disablement up to age 70—commencing from the date of the ins. if need be.

The following T. gives the rates charged at three different periods:

Age.	No. 1 Orig. T. con- tinued down to Feb. 1850.	No. 2 T. in force from Feb. 1850 to Feb. 1872.	No. 3 T. in use from 1872 to present time.	Age.	No. 1 Orig. T. con- tinued down to Feb. 1850.	No. 2 T. in force from Feb. 1850 to Feb. 1872.	No. 3 T. in use from 1872 to present time.
	£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.	£ s. d.
24	2 19 0	3 4 11	3 17 3	40	4 14 0	5 3 5	6 13 4
25	3 0 4	3 6 5	3 19 6	41	4 17 8	5 7 5	6 18 3
26	3 1 8	3 7 10	4 1 11	42	5 1 4	5 11 6	7 3 6
27	3 3 4	3 9 8	4 4 5	43	5 5 0	5 15 6	7 8 11
28	3 5 0	3 11 6	4 7 2	44	5 9 4	6 0 4	7 14 7
29	3 7 0	3 13 8	4 10 0	45	5 14 0	6 5 5	8 0 5
30	3 9 0	3 15 11	4 13 0	46	5 19 4	6 11 3	8 6 6
31	3 11 0	3 18 1	4 16 2	47	6 5 0	6 17 6	8 12 11
32	3 13 0	4 0 4	4 19 7	48	6 11 8	7 4 10	8 19 6
33	3 15 0	4 2 6	5 3 2	49	6 18 8	7 12 6	9 6 4
34	3 17 0	4 4 8	5 6 11	50	7 7 0	8 1 8	9 13 6
35	3 19 4	4 7 3	5 10 11	51	7 16 0	8 11 7	10 0 11
36	4 1 8	4 9 10	5 15 1	52	8 3 8	9 0 0	10 8 8
37	4 4 4	4 12 9	5 19 5	53	8 12 0	9 9 2	10 16 8
38	4 7 4	4 16 1	6 3 10	54	9 2 0	10 0 2	11 5 0
39	4 10 4	4 19 5	6 8 6	55	9 13 8	10 12 8	11 13 8

When the No. 3 T. was adopted in 1872, an add. was made to the rules (xv.) giving the directors power, should the Health Fund in itself prove insufficient to pay the whole amount of sickness claimable, to reduce the allowance of such members as should have received the full provision in sickness for a period of 78 weeks ($1\frac{1}{2}$ year) and upwards, to the extent of one-half of the sum orig. insured. The reason for this change is rendered quite apparent by the position of the Sickness Fund in 1871. See our hist. of the So.

The Rep. of the So. for the year ending 31 May, 1880, contained the following, under title of "Sickness Assu. Branch": The number of policies in this branch was reduced during the year by death, surrender, and expiry, by 5; and 10 members received from the funds of the So. for "provision during sickness," according to their respective claims, the sum of £582.

1830.—About or before this date, a paper on Health Ins. appeared in the *Quarterly Jour. of Agriculture*, Edin., believed to be from the pen of Mr. W. Fraser.

1831.—The *Aberdeen* Mut. and Friendly So. was founded for carrying on the bus. of Health, Life, and Fire Ins. The bus. in the Health Department has taken the shape of that of a superior Friendly So.

1832.—Mr. T. R. Edmonds, B.A., in his *Life Tables*, etc., pub. this year, treats of the relation between sickness and death, and furnishes some Health Ins. T. which we have already quoted in some detail under FRIENDLY SOS., MORT. AND SICKNESS EXPERIENCE OF.

1837.—The *National Endowment and Assu.* So. founded this year had a scheme of Superannuation Annu., under which an allowance of £20 p.a. would commence at the age of 50, 55, or 60, as arranged, or earlier in the case of permanent incapacity, and continue during the remainder of life. The prems. were payable for 13 years only, in any case, and were as follows:

This was a very excellent scheme; but we believe it met with but small success.

1837.—Mr. Peter Watt, "Accountant in Edinburgh," pub.: *Progress and Present State of the Science of Life Ins.; with Thermometrical T.; also Obs. on Health Ins.*, etc. These obs. relate entirely to Health Ins. for the industrial classes.

1839.—The *General Life and Invalid Assu. Asso.*, founded this year, embraced a scheme of Sickness provision combined with Life Ins., under which an allowance during periods of sickness, ranging from £1 to £5 p. week, was granted, "and such an arrangement will be made as will prevent the assured from losing the benefit of his life pol. in consequence of ill health."

Present Age.	Age 50. Ann. Prem.	Age 55. Ann. Prem.	Age 60. Ann. Prem.
	£ s. d.	£ s. d.	£ s. d.
21	7 10 0	5 2 1	3 6 3
23	8 3 6	5 11 4	3 12 5
25	8 18 6	6 1 5	3 19 0
28	10 4 3	6 19 0	4 10 4
30	11 3 9	7 12 4	4 19 0
33	12 17 2	8 15 1	5 13 10
35	14 2 7	9 12 4	6 5 0
37	15 10 10	10 11 9	6 17 7
40		13 5 6	7 19 4
42		13 11 4	8 16 3
45		...	10 6 5
47		...	11 7 2

The Sickness allowance was combined with the Life Ins. in this manner : A pol. for £100 at death carried (in the combined scale) £1 p. week during disability from sickness. Thus (under T. No. 2) for 5s. 9d. a month, or £3 3s. 11d. p.a., a person aged 20 may secure until 65 years of age £1 p. week during sickness and £100 at death; and by multiplying the prem., increased benefits on the same scale. There were other T. which covered disability from "Accidents and other causes," as well as from Sickness, by the payment of slightly increased rates; and there were Endowment Annu. to commence at the periods when the other benefits ceased.

1844.—Mr. Wm. Spens, then Man. of the *Scottish Amicable*, read before the Glasgow Philosophical So. a paper : *Hints for the Formation of a Friendly So. for the Professional and Mercantile Classes*. This is included in a small vol., *Papers on Life and Health Assu.* The author says (p. 23) :

The extent to which, at present, allowances are provided under Friendly Sos., is not, so far as I am aware, so great as to afford any considerable relief, generally speaking, to those who are drawing incomes from professional or mercantile pursuits—at least not in a degree corresponding to the immense benefits such Sos., if properly constituted, confer on the classes of the community for which, no doubt, they were orig. intended. In the present communication it is proposed to submit briefly the grounds which appear to exist for an extension of these advantages to a numerous class among professional and mercantile persons, and the mode in which this could be efficiently accomplished.

He enforces this necessity in the following rational manner :

... It must be a general feeling among persons whose income is derived from a salary that permanent sickness would leave their families almost totally unprovided for. They can provide for them while health remains—they can provide for them in the event of death; but supposing they were struck with palsy or permanent blindness, their families might be rendered destitute. No doubt it will be said that the chance of such calamities is comparatively small, and this is fortunately true; but it is no reason why we should not guard against the consequences of such a dire disaster—it is rather cause for thankfulness that the sacrifice for the purpose is small. If rarity were to determine us, we should cease to insure our dwelling-houses against fire. . . . The calamity for which I wish provision to be made is much more serious; and there would be no need of paying out of the So. more than the risk requires—indeed I wish to persuade you, that the object in view may be secured in combination with a Deferred Annu., to commence at an advanced age, by payments not higher than some Ins. Offices would charge for the latter alone. The object may thus, in some sense, be secured for nothing.

This he proceeds to demonstrate, remarking by the way (p. 26) :

I am well aware that there is very great difficulty in defining permanent sickness, and that many will say that the scheme is impracticable on this account. But if it cannot be otherwise satisfactorily ascertained, it may, by appointing a tribunal, whose decision on a case is to be decisive; and upon the whole I think that this would be the best arrangement, and would effectually prevent any questions. The cases would be very rare; but perhaps when they did occur the judges might consist of the Directors for the time, with a medical gentleman appointed by each director; or there might be a permanent appointment, besides an ordinary medical officer, of a number of medical gentlemen to be united with the directors in deliberating on such cases as might occur. Dependence on the honour and judgment of such a board would, I think, be preferable to an attempt at special definition, which might lead to litigation.

Finally, after an investigation of the rates in use by various Life Ins. and Friendly Sos., he arrived at the conclusion that the proper ann. prem. to secure £100 p.a. in the event of permanent incapacity to work would be as follows : age 20, £3; 25, £4; 30, £5 2s. 6d.; 35, £6 12s. 6d.; 40, £9; 45, £12 5s.; 50, £18.

1845.—There was projected the *North British Farmers and General Benefit Health and Life Assu. So.*, which contained T. not improbably based upon Mr. Spens' deductions.

1846.—The *Professional Life Office*, founded this year, issued pol. against "Paralysis, Blindness, Insanity, Accidents, and other Bodily and Mental Afflictions disabling the parties." But the rates for such Ins. were not pub. Some such pol. were issued by the Co. See 1872.

1848.—*United States.*—About this date there was a strong manifestation in favour of Health Ins. in the U.S. Mr. J. A. Fowler, in his excellent *Pennsylvania Ins. Handbook* (1860), says hereon (p. 36) :

We are now approaching a period when risks on health were engaging the attention of experimentalists. With no knowledge of the actual hazard, with the crudest estimate or no estimate at all of the average sickness p.a. at the respective ages, unchartered Health Assos. were started throughout the country, promising certain weekly allowances to subscribers or members. The general theory appears to have been that any yearly rate would allow the same sum to be paid weekly in the event of illness; that is, for 7 dol. p. year, each sick member was to receive 7 dol. p. week, and with no very narrow limitations as to continuance of allowance. At first there was some discrimination in regard to different ages : a smaller ratio of payment for the younger years; but eventually competition drove the whole bus. into a mass; and for a prem. of 6 dol. a year, 6 dol. p. week would be paid at 65 years of age. As a consequence, Health Ins.—a needed and beneficial instrumentality—has fallen into disuse and disgrace. Conducted upon correct data, it would afford an available and convenient provision for periods of illness, which is not attended with the labour and demands upon time that present Inst. granting such aid in sickness require of their members.

The *Philadelphia Life Ins. Co.* incorp. under Charter dated 20 Mar. 1848, was empowered "to make all and every Ins. appertaining to or connected with Health risks, of whatsoever kind or nature." Sec. 10 of this Charter was as follows :

The directors shall have power to require every person subs. to the stock of the said Co. to effect ins. therein, either upon his own health or upon the health of some other person, for such length of time as they may prescribe; but every person effecting ins. in said Co. shall have the privilege of subs. for at least one share of said stock, paying at the same time the required instalment, until the whole number of shares authorized by this Act shall be taken up; and any person subs. for the stock of the said Co., and paying the instalment at the time of subs. as aforesaid, may be allowed by the directors, and with their permission, to obtain, in add. to the stock so subs. by him, a pol. of ins. upon

his health, or upon the health of some other person : being in all respects qualified according to the terms of the by-laws of the said Co.; and such person so subs. may receive a credit for the amount of the prem. of such ins. out of the said instalment paid on one share of stock, until 200 shares of the cap. stock are subs. for, but not after.

The Co. was not a success in either its Life or Health depart., and afterwards reconstituted, to transact Fire bus.

1853.—The *English and Irish Church*, etc., Assu. Co., purported to ins. against all the infirmities affecting the health of mankind. See our hist. of that Co.

In the appendix to the 12th Rep. of Reg.-Gen. pub. this year, was included a series of valuable T. prepared by Dr. Farr, and applicable to *Health Ins.* These have been already given in some detail under FRIENDLY SOS., MORT. AND SICKNESS EXP. OF.

1854.—The *Travellers and Marine* Ins. Co. was founded; and its "Health" depart. embraced the following objects : 1. Ins. against Total Permanent Disablement, whether from Disease or Accident. 2. Ins. against Temporary Sickness. 3. Ins. against either Temporary or Permanent Disablement, whether from Disease or Accident. 4. Ins. against Disablement, whether from Sickness, Accident, or from Old Age. 5. Ins. against Permanent Disablement, the prem. to be repaid in the event of death, or a fixed sum paid in lieu thereof.

By means of a pol. of the 1st class a person in good health might secure to himself a certain and definite income, should he, by mental or bodily affliction, as Disease, Accident, or Insanity, become permanently disabled; rate at age 25, to secure £100 p.a., £1 16s. 10d.

The 2nd class of pol. applied to Temporary Disablement arising from Sickness or Accident, and especially applied to all those cases of temporary illness or disablement which were excluded from the 1st class : rate at age 25, to secure £2 p. week, £4 11s. 2d.

The 3rd class of pol. embraced, in a slightly varied form, the two previous classes of ins., giving a fixed weekly allowance during temporary disablement, and continuing the allowance if the sickness became permanent. *The payment of prem. ceasing when the disability became permanent*; rate at age 25, to secure £1 p. week during temporary or permanent disablement, £2 14s. 4d.

The 4th class, in addition to the incidents of disease and accident, extended its advantages to debility arising from Old Age, giving fixed Annu. on arriving at a certain age, whether disabled or not. The rates here varied with the period at which the benefits were to commence.

The 5th class provided a sum during total disablement from disease or accident, and also a sum to be paid at death, this sum being either the return of all prem. paid, or a more definite sum, in the event of no claim having been made for disablement; rate at age 25, to secure £100 p.a., prem. returnable if no permanent disability, £3 19s. 2d.; to secure £10 disablement annu. and £100 at death, £2 1s. 4d.

No person over 40 years of age was insured under any of the Health T.; and permanent disability was held to apply only to cases of sickness which lasted 12 months and over.

Another valuable feature was embodied in the following T.:

Yearly Prem. required to insure an existing Pol. of Assu. from loss through Permanent Mental or Bodily Disablement, by guaranteeing the payment of Prem. as they become due.

Age.	Policy of £100.			Policy of £500.			Policy of £750.			Policy of £1000.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
20	0	0	8	0	3	5	0	5	1	0	6	10
25	0	0	10	0	4	4	0	6	6	0	8	8
30	0	1	2	0	6	1	0	9	1	0	12	1
35	0	1	10	0	9	4	0	14	0	0	18	7
40	0	3	8	0	18	3	1	7	4	1	16	3

Example.—A person aged 25 being insured in any life office under a pol. for £500, this Co. would undertake to pay the ann. prem. necessary to keep that pol. in force in the event of the insured becoming permanently disabled, for an ann. payment of 4s. 4d.

Some of the pols. issued by this Co. are still in force.

In the same year the *Marine and Gen. Travellers* was founded, having a set of similar T.

In the same year, also, the *Diadem* Life embodied a scheme of pol. "securing an income during the loss of employment occasioned by illness or accident."

The *British Nation* Life, founded this year, issued pol. against Paralysis, Blindness, and Death, payable on the happening of the first of these events.

1855.—The *General Accident and Compensation* Co. insured "against complete disability or total loss of Health from any cause:" with the further feature of annuities, immediate or deferred, "on terms much more liberal to the *unhealthy* than to the *healthy*;" and such annuities to be largely increased in cases of total disability arising from Accidents."

The following was the chief T. for "Health" Ins. put forward by this Co.:

Yearly Prens. required to provide the following Allowances in the event of any Mental or Bodily Affliction permanently disabling the Person Ins. from following any Profession or Occupation.

AGE.	TO PROVIDE ANNUITIES OF						AGE.	TO PROVIDE ANNUITIES OF								
	£10			£20				£10			£20					
	PER ANN.			PER ANN.				PER ANN.			PER ANN.					
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
20	0	5	6	0	11	0	1	7	6	31	0	10	6	1	1	0
21	0	5	9	0	11	6	1	8	9	32	0	11	0	1	2	0
22	0	6	0	0	12	0	1	10	0	33	0	11	6	1	3	0
23	0	6	4	0	12	8	1	11	8	34	0	12	0	1	4	0
24	0	6	9	0	13	6	1	13	9	35	0	12	6	1	5	0
25	0	7	3	0	14	6	1	16	3	36	0	13	2	1	6	4
26	0	7	9	0	15	6	1	18	9	37	0	14	0	1	7	0
27	0	8	4	0	16	8	2	1	8	38	0	14	10	1	9	8
28	0	8	10	0	17	8	2	4	2	39	0	15	8	1	11	4
29	0	9	6	0	19	0	2	7	6	40	0	16	6	1	13	0
30	0	10	0	1	0	0	2	10	0							

1859.—The Church of England took over the bus. of the *Schoolmasters and Gen.*, and has continued a special scheme of Health Ins., devised by that Asso., under which Sick-ness Annu. are granted to schoolmasters, on payment of *quarterly* prems., on the following scale: age 18, 7s. 3d.; 23, 7s. 10d.; 28, 8s. 5d.; 32, 9s.; 42, 11s.; 50, 13s. 9d. For these £1 p. week is paid during sickness up to age 65. The following are the rules under which this branch is conducted:

1. To entitle a pol.-holder to sick allowance, sickness shall be such as to incapacitate him from discharging duty in any school or engaging in remunerative employment of any description.
2. During the first and second weeks of sickness, to be called the "preliminary term," *no allowance can be claimed.* The first and second weeks' allowance shall be due at the expiration of the fourth week of sickness, and the allowance shall then be due fortnightly while sickness continues.
3. A declaration of sickness, according to form, shall be sent to the Office, signed by the assured, and certified by his medical attendant and by a clergyman. Every declaration of sickness shall be sent to the Sec. within the third week of sickness, otherwise the "preliminary term" shall be considered to date from the day on which the declaration is received at the Office.
4. Every demand for sick allowance shall be according to form, and be sent to the Office signed and certified in like manner as the declaration of sickness.
5. Sick allowance cannot be claimed while the assured is resident out of the U. K., nor if he should refuse to be seen and to answer all questions submitted to him by any medical officer appointed by the Co.
6. The sick allowance will be reduced to two-thirds of the weekly amount after having been received for 52 weeks, to one-half after 78 weeks, and to one-third after 156 weeks, whether the weeks of sickness be consecutive or otherwise.
7. The pol. will remain in force so long only as the assured continues a member of the Scholastic profession. In the event of his ceasing to act as a schoolmaster, he will be entitled, if under 50 years of age, and not having been a claimant for sick allowance, to a return of one-third of the prems. paid on account of the assu.

1860.—The *Norwich Provident* Asso. was founded, and had a scheme of Health Annu. **1868.**—The *National Provincial* Assu. Co. had a scheme of Health Ins. accompanied with Medical Attendance; it was mainly framed in view of incorp. then existing F. Sos.

1869.—*Germany.*—Herr Wilhelm Lazarus of Hamburg contributed to the *Assu. Mag.* [vol. xv. p. 143] a short paper: *On Assurances against the Risk of "Invalidity," or Permanent Inability to work*; wherein some valuable information is furnished of investigations in Germany on the question of Health Ins. We are introduced to the subject in the following pleasant manner:

Life Assu. provides for the family of the deceased in case of premature death; Deferred Annu. provide for old age; but both inst. leave uncovered the risk of premature inability to work. *Invalidity Assu., including the benefits of a Deferred Annu., would be the real complement to Life Assu.* This truth is so deeply felt in Germany, that a good many inst., employing a large number of officers, workmen, and labourers, many mills, and particularly the Railway Cos., long since directed their attention to the providing for their officers in case of their being invalidated. How were they to calculate the ann. contribution, how to make the valuation of their liabilities?

He proceeds to point out that there were no data, or at least very insufficient data upon which to calculate, for different ages, the prob. of "becoming an invalid" during the next year; and this want induced Dr. Heym, of Leipzig, in 1851, when he had to make the computation of Invalidity Annu. for the Leipzig and Dresden Railway So., to estab. the Hypothesis that the prob. of becoming an invalid during the next year is '0001 at the age of 20, and 1 at the age of 79; and that it proves a geometrical progression in the

interval. The results which he derived from this hypothesis agreed with the obs. which Prof. Hülse had made on the Invalidity of Miners in Saxony.

We are told that Dr. Wiegand accepted this same Hypothesis as a basis for his calculation of Invalidity Annu. for the Thuringian Railway Sos. pub. 1859, as *Mathematical Foundation of Railway Officers Invalidity Annu.* [*Mathematische Grundlagen für Eisenbahn Pensioncassen*], with the single modification that he made the geometrical progression cease at the age of 68, supposing the prob. of becoming an invalid equal to 1 at the age of 69. The same hypothesis served as a basis for the Invalidity Annu. of Physicians and for the calculations of Wiegand's work *Invalidity Assu.* [*Versicherung gegen Erwerbsunfähigkeit*], Halle, 1865.

But Dr. Wiegand did not stop here. Invalidity Assu. should not remain based upon a mere hypothesis. He made it his object to open the source of experience, on which to found sufficiently trustworthy data for the computation of the prob. of becoming an invalid. Such experience was in the possession of the Railway Cos., and at length Dr. Wiegand obtained access to this. As a result, his work *On Mort. and Invalidity Statistics for Railway Officials* [*Die Mortalitäts- und Invaliditäts-Statistik bei Eisenbahn-Beamten Actenmäßige Darstellung der darauf bezüglichen Operationen*], wherein he sets forth not only what he has achieved, but what he expected would follow. Further:

The object of Dr. Wiegand is by no means confined to the Law of Invalidity amongst railway officials. He is well aware of the importance of Invalidity Assu. in general; and he has no doubt that Life Assu. Offices will willingly cultivate this branch, as soon as they possess the necessary data for its computation. An Invalidity T. of railway officials will, in Dr. Wiegand's opinion, enable them to grant Invalidity Assu. to persons in any occupation: *as the Invalidity to be expected in other pursuits is less than with railway officials*—the Railway service requiring so vigorous a constitution, that it must pension off its officials, as invalids, in a state of health which would not entitle them to be considered as invalid in another occupation.

Concerning Railway Officials in general it will be instructive to learn what Dr. Wiegand has himself to say. Thus (p. 4):

It is nearly an axiom with Life Assu. Sos. that Railway officials are subject to a very high rate of mort. Constant reports of railway accidents, where so many of the officials have perished, must create the impression that this class has a very low expectation of life. This is the reason why some offices entirely refuse to insure railway officials, and others only accept them with a considerable extra prem. *But there exists no real measure for the extra risk founded on experience, and each office is guided by the vague feelings of its manager.* This state of things is unreasonable. If there exists an extra risk, its true value must be found out by obs.

Among 73,379 Railway Officials under obs. 415 cases of Invalidity had occurred, while according to Dr. Wiegand's Hypothesis there would have been 401,789 invalids. Herr Lazarus may well exclaim, "The coincidence is surprising!"

1872.—In the *European Arbitration*, a very nice point arose regarding the mode of proof on the estate of an insolvent Co. under a pol. of this class. This was in *Trustram's Case*. In add. to his ordin. life pol. the insured had 2 pols. each insuring him £150 p.a.—or with regard to one pol. £1678 6s. 3d. paid down, according to his option—in case he should during the currency of these pol. suffer from permanent incapacity, through paralysis, insanity, accident, or otherwise be prevented from following the duties of his ordinary profession. Mr. Trustram died very soon after the liq. of the *European* commenced, at an advanced age, never having suffered any total incapacity: but his representatives now claimed that inasmuch as at the date of the winding-up order a large prem. must have been paid to any other Co. for a similar pol. on the insured, they were entitled to bring in a claim upon the pol. notwithstanding the death of the insured. The claim was not allowed, and hence no principle was laid down regarding such pol.

We believe these particular pol. had orig. been issued by the *Professional Life Office*.

1875.—Dr. Farr, in his Supplement to the 35th Rep. of the Reg.-Gen., offers the following obs. regarding the proportion of sick in the community, which have an important bearing on the subject under consideration:

It has been found by experience that in England to *one ann. death* in a body of men *two* are on an average constantly suffering from sickness of some severity. There are *two years* of severe sickness on an average to *one death*. In the police and in some Friendly Sos. the constantly sick to one ann. death are 2·8; in the army (1873) at home 4·2; enthetic disease will account for the difference.

As there are now 700,000 ann. deaths in the U. K., it may be inferred that there are 1,400,000 constant sufferers from severe sickness; and 2,000,000 sufferers from such sickness as requires medical relief, or throws the members of Friendly Sos. on their funds. That would give 100 patients each to 14,000 hospitals and 6000 dispensaries. The sickness is of every shade from the darkest mortal ailments to the lighter pains and muscular weaknesses, and is so related to the mortality that the deaths and sickness within certain limits rise and fall together; thus, if the constantly sick in the pop. could be reduced from 1,400,000 to 1,050,000, the deaths could be reduced from 700,000 to 525,000; or the ann. mort. would be reduced to the desired rate of 17 in 1000. The diminution of human suffering keeps pace with the diminution of the death-rate; so do the ineffectives of the working pop. and the claims on the funds of Friendly Sos.

Sickness occurs irregularly through a man's life in attacks as they are called; still under such a law that there is an *average amount* of sickness to every death; men are also subject to an average number of attacks during their lifetime under the same sanitary conditions; the liability of adults to attacks of one kind or other being the same at different ages, but the fatality and the duration of the illnesses from those attacks rising with the advance of age according to the same laws.

Other details furnished by the same authority will be reviewed under title SICKNESS.

1877.—*France*.—It was stated in *L'Argus* that a scheme of Ins. against loss through illness had been inaugurated in Paris by a Mut. So., *La Fortune Universelle*.

[FRIENDLY SOS., MORT. AND SICKNESS EXPERIENCE OF.] [LOCALITY.] [OCCUPATIONS.] [SICKNESS, LAW OF.]

HEALTH, LAWS OF.—The laws affecting Individual Health have been made the subject of many learned treatises, already referred to under the general title HEALTH. The laws affecting the Public Health, which during the present generation have received marked attention, will be considered under PUBLIC HEALTH.

HEALTH OF LONDON ASSO.—Founded 1846, on the outbreak of Cholera in the Metropolis. See PUBLIC HEALTH.

HEALTH AS AFFECTED BY OCCUPATION. See OCCUPATION.

HEALTH OFFICERS.—Officials appointed under the authority of the Public Health Acts.—See PUBLIC HEALTH.

HEALTH OF PROPOSER. See GOOD HEALTH; HEALTH, CHANGE OF.

HEALTH RESORTS.—It has become part of the modern system of every-day life through Europe and America that families seek a change from the place of their ordinary abode to some location of healthy repute, either inland, or by the sea-side, as fancy may indicate, or circumstances admit, say once a year at least. That the practice is a wise one is generally admitted. In the case of invalids, such a change of locality is frequently regarded as of the first necessity.

In more recent years it has been deemed prudent to apply the means at command to test the real salubrity of these health resorts. Mere tradition in such matters is no longer regarded as trustworthy, and rightly so. The statistical returns, from which modern scientific data is sought to be obtained, are themselves in process of transition and improvement. The following references will, it is believed, indicate the direction which inquiries should take; as also furnish a fair outline of what has been already accomplished.

1788.—Dr. James Lind, M.D., pub.: *Diseases Incidental to Europeans in Hot Climates*, wherein, after an extensive survey of the facts, he observed that “not only continents, but most large islands, in every quarter of the world, have ridges of high mountains, where the air proves healthy to European constitutions; even in the smaller islands such a retreat can generally be found.” He strongly urged the Europeans in Jamaica to reside in temperate and pleasant situations, on the sides of mountains, where the ground is cleared from wood and has no stagnating water near its surface; where the soil is rich and fertile, favourable to the cultivation of European plants, and to the health of European animals.

His advice has been very little regarded by the civil pop.; the military stations have more recently been placed in such locations as are here indicated, with the greatest possible benefit. [ARMY.]

1850.—The following T.—the first of its kind—will be regarded with much interest. Some of the places named were then comparatively in their infancy as Health Resorts.

T. showing the Ann. Mort. p. 1000 living during the 10 Years 1841-50.

DISTRICTS.	Death-rate.	DISTRICTS.	Death-rate.
Tunbridge (including Tunbridge Wells).....	20	Barnstaple (including Ilfracombe).....	17
Thanet (including Ramsgate and Margate).....	19	Bath	24
Dover	21	Clifton (including part of Bristol City and Bristol Workhouse)	23
Hastings	18	Cheltenham	20
Eastbourne	15	Upton-on-Severn (includ. Malvern).....	18
Brighton	21	Warwick (including Leamington).....	20
Worthing (including Littlehampton and Arundel)	17	Ashborne, Bakewell and Chapel-en-le-Frith (including Buxton and Matlock)	20
Isle of Wight (including Ryde, Newport and Cowes)	17	Scarborough	21
Mutford (including Lowestoft).....	17	Knaresborough (includ. Harrogate).....	20
Yarmouth	23	Whitby	21
Newton Abbot (including Dawlish, Torquay, and East and West Teignmouth)	19	Kendal	20
		Aberystwith	18
		Bangor	21
		Anglesea	17

1856.—The Reg.-Gen. in his report for the 2nd quarter of this year offered the following obs., referring to the preceding T. :

The healthiest parts of England are not yet places of general resort; but the ann. mort. in the various districts, comprising watering-places, seldom exceeds 21 in 1000 of the pop.; and is prob. lower in those regions of the districts to which visitors resort. The annexed T. shows the mort. of some of the principal watering-places. . . . And it should always be borne in mind, in selecting places of resort, that through the peculiar nature of zymotic diseases, *places usually healthy are periodically visited by epidemics*, which can only be avoided by consulting recent returns, or by actual inquiries on the spot. The cleansing of the sewers of all watering-places require improvement, as their arrangements were made when sanitary science was at a low ebb. (See 1864.)

1860.—A return for the 10 years 1851-60 gave the following details : In the entire district of the Isle of Wight in those ten years the deaths averaged no more than 17·1 a year to every 1000 persons living; in the sub-district of Godshell, comprising Ventnor, etc., the death-rate was only 15·4. At Torquay the deaths were 17·1 in the 1000; in

Broadwater, Worthing, and Lancing not quite 17·2; in Eastbourne, Seaford, etc., 17·3; in Clifton not quite 17·6; in the district of Hastings, St. Leonards, and Ore, nearly 18·3; in the sub-district of Tunbridge Wells and Speldhurst, 18·7; Ramsgate and Broadstairs, 19; Leamington, 19; in the district of Cheltenham, with Charlton Kings, 19; in the sub-district of Weymouth, 20·1. At Bath (the entire district), Brighton, and Scarborough the mort. was 22 in a 1000; Whitby, 22·1; Margate, 22·3. But the sub-districts of Scarborough and Whitby are marked in the returns as having a workhouse of the entire union; and on the other hand, the sub-districts first named, with the exception of Eastbourne and Weymouth, possess the advantage of not having a workhouse of the union within their limits, a circumstance which, of course, affects the returns. The death-rate for all England was 22·2 in a 1000. The Reg.-Gen. is preparing mortuary returns for the ten years with such distinctions of age and sex, and classification of causes of death, as may enable us to estimate how far each district of England is affected by the several chief sorts of morbid influence.

1864. — The Reg.-Gen., in Rep. for 2nd quarter of 1864, reverts to some of the causes which prevent the progress of the Public Health at Health Resorts: "The drainage is costly, and its expense is postponed or evaded to the last moment;" and he continues:

Nearly all the English watering-places are on good sites, and have many advantages over those abroad, and there can be no doubt that ultimately England will be the resort of foreigners who are in search of health. when we find a mort. rate p. 1000 so low as 15 in the Isle of Wight, 16 in Newton Abbot, including Torquay, 17 in Cheltenham, 17 in Eastbourne, 18 in Worthing, 18 in Barnstaple, including Ilfracombe, 18 in Mutford, including Lowestoft.

The Brighton rate of mort. is 20 in 1000; but there is good reason for believing that it might be reduced to as low a rate as prevails at Cheltenham or Worthing, at a cost which would certainly be returned by its surer tenure of the public favour. Some of the sea-side towns are draining their houses, and for this they deserve applause; but it appears to be very unreasonable to throw into the waters of the sea, where visitors bathe, the offensive matters which would fertilize the disinfecting chalk soils in the surrounding fields.

He concludes by asking, Why is the mort. of the Isle of Thanet, including Ramsgate and Margate, still 23? Why is the mort. of Hastings 24? Why is the mort. of Clifton 24? Why is it in Yarmouth at the rate of 25 per 1000?

The following T. showing the population and rate of mort. in the districts containing some of the principal English health resorts was given:

Districts.	Pop. 1861.	Deaths regis. in the quarter ending 30 June, 1864.	Ann. rate of mort. to 1000 living in the	
			10 years 1851-60.	3 months ending 30 June, 1864.
Tunbridge (including Tunbridge Wells)	34,271	180	20	20
Thanet (including Ramsgate and Margate)	31,862	186	21	23
Dover.....	31,575	164	20	20
Hastings.....	26,631	166	18	24
Eastbourne.....	10,721	49	17	17
Brighton.....	77,693	405	22	20
Worthing (including Littlehampton and Arundel)	18,921	84	18	18
Isle of Wight (including Ryde, Ventnor, Newport, and Cowes)	55,362	210	17	15
Mutford (including Lowestoft)	24,050	113	20	18
Yarmouth.....	30,338	195	25	25
Weymouth (including Melcombe Regis)	27,291	156	18	21
Newton Abbot (including Dawlish, Torquay, and East and West Teignmouth)	59,063	238	18	16
Barnstaple (including Ilfracombe)	36,293	156	18	18
Bath.....	68,336	419	22	25
Clifton (including part of Bristol City and Bristol Workhouse)	94,687	602	21	24
Cheltenham.....	49,792	213	19	17
Upton-on-Severn (including Malvern)	21,010	107	20	20
Warwick (including Leamington)	44,047	234	21	21
Ashborne, Bakewell, and Chapel-en-le-Frith (including Buxton and Matlock)	66,046	332	20	20
Scarborough.....	39,425	180	21	22
Whitby.....	23,633	139	20	23
Kendal.....	37,463	182	19	19
Pembroke (including Tenby)	29,003	149	19	19
Aberystwith.....	25,464	138	19	21
Bangor.....	36,039	206	20	22
Anglesea.....	38,157	228	20	24

It has to be borne in mind in reviewing this T. and all other like statistics in this art. that the census is taken in the month of April, when the sea-side places contain only their usual resident pop. The mort. returns, when spread over a series of years, embrace the deaths during the full seasons for visitors, when many persons in bad health are taken there as a last hope, and add to the deaths of the district. This is the case more or less with the Isle of Wight and with Bath and Clifton all the year round. The months of April, May, and June are perhaps the only three when an approximation to the normal rate of mort. can be obtained.

1870.—The returns of the Reg.-Gen. for the 10 years 1861-70 included some places not previously separately reported upon. The following is an abstract, arranged in the order of favourable mort. :—In the sub-districts of South Bersted, containing Bognor, the annual mortality averaged only 15·3 per 1000 persons; in Folkestone, 16·4; Prittlewell, containing Southend, 16·6; Eastbourne, 17; Ilfracombe, 17·1, and the same in Worthing; Isle of Wight, 17·2, and the same in Tunbridge Wells; Ramsgate, 18·1, and the same in Penzance; Tenby, 18·2; Harrogate, 18·4, and the same in Wallasey sub-district, containing New Brighton; Ottery St. Mary sub-district, containing Sidmouth, 18·6, and the same in Littlehampton, and also in Deal and Walmer; Banwell sub-district, containing Weston-super-Mare, 18·7; Torquay, 18·8, and the same in Teignmouth and Dawlish; Dover, 19·2, and the same in Lowestoft, and in Creuddyn, containing Llandudno; Hastings and St. Leonards, 19·4, and the same in Leamington; Matlock, 19·6, and the same in Exmouth and in Dartmouth; Cheltenham, 19·9; Clifton, including part of Bristol, 20; Lyme Regis, 20·2, and the same in Hanley Castle sub-district, containing Malvern; Weymouth, 20·3; Herne Bay, 20·5; Beaumaris, 20·7; Buxton, 20·8; Poulton-le-Fylde sub-district, containing Blackpool and Fleetwood, 21·2; St. Asaph sub-district, containing Rhyl, 21·9; Margate, 22, and the same in Brighton and Hove; Yarmouth, 22·5; Aberystwith, 22·7, and the same in Bangor; North Meols sub-district, containing Southport, 23·1; Bath, 23·3; Scarborough, 23·4; Whitby, 24·2 per 1000. It may be said that the death-rate for the 10 years 1861-70 is not a test of time present; we therefore take now the latest return—viz., for the spring (or second) quarter of the year 1874, and proceed to state the annual death-rate in that quarter. It was in many places less, often materially less, than in the 10 years 1861-70 :—In South Bersted (Bognor) it was only 14·9 per 1000; in Worthing, only 12·9 per 1000; Isle of Wight, 16; Tunbridge Wells, 16·4; Ramsgate, 13·6; Tenby, 16·7; Harrogate, 17·9; Ottery St. Mary (Sidmouth), 14·9; Littlehampton, 11·7; Deal and Walmer, 17; Torquay, 14; Lowestoft, 13·8; Dover, 17·7; Leamington, 16·4; Matlock, 18·1; Cheltenham, 15·3; Clifton, 17·9; Hanley Castle (Malvern), 11·5; Herne Bay, 19·8; Beaumaris, 15·3; Buxton, 13; St. Asaph (Rhyl), 19·1; Margate, 21·1; Brighton with Hove, 16·6; Yarmouth, 21·9; Aberystwith, 18·2; Bangor, 18; Scarborough, 15·5; and Whitby, 20·3. These returns show an improvement on those for 1861-70. Other places do not maintain the 10 years' average. In the second quarter of 1874 the annual rate of mortality in Folkestone was 20·5 per 1000; in Prittlewell (Southend), 21·6; Eastbourne, 17·6; Ilfracombe, 20·5; Penzance, 20·7; Wallasey (New Brighton), 22·2; Banwell (Weston-super-Mare), 19·8; Teignmouth and Dawlish, 22; Creuddyn (Llandudno), 23·4; Hastings and St. Leonards, 19·5; Exmouth, 21·5; Dartmouth, 23·3; Lyme Regis, 31·5; Weymouth, 21·7; Fylde (Blackpool and Fleetwood), 26·1; North Meols (Southport), 24·2 per 1000. It is worthy of remark that all the nine inland watering-places in the 10 years' list show an improved state of health in 1874; their death-rate in the last quarter ranging from 11·5 to 19·1 per 1000.

1872.—Dr. John Beddoe, M.D., F.R.S., of Clifton, prepared the following T. of

Average Rates of Mort. for 1871 and 1872 in Reg.-General's Sub-divisions:

	Rate p. 1000.	Rate exclusive of Deaths in Hospitals and Workhouses.
Westbury-on-Trym (including part of Clifton)	14·5	14·5
Newton (Torquay)	16·2	16·1
Cheltenham	17·8	16·2
Clifton	16·3	16·1
Hastings (St. Mary)	16·9	16·6
Teignmouth	17·2	17·0
Banwell (Weston-super-Mare)	17·7	17·3
Hastings	18·4	17·5
Leamington	18·7	17·9
Brighton	21·9	18·6
Bath (Bathwick, Lansdown, Walcot)	18·8	18·8
Bath (whole district)	21·4	18·8
Scarborough	23·0	21·4
Exmouth	21·7	21·6

Here several places are included not previously noted. The author's remarks as affecting this T., and stating reasons for selection of the towns here enumerated, are given under date 1875.

This year there were pub. two works having special reference to Health Resorts, taking a range of continental Europe :

1. *Change of Air, Water, and Scene; A Physician's Hints about Doctors, Patients, Hygiène and Society; with Notes of Excursions for Health in the Pyrenées, and amongst the Watering-places of France (inland and seaward), Switzerland, Corsica, and the Mediterranean.* From the French of Dr. Alphonse Donne.

2. A contribution to the "Medico-Chirurgical Trans." by Dr. C. T. Williams, M.D., *On the Effects of Warm Climates on the Treatment of Pulmonary Consumption, etc.*, which latter we have reviewed under title CONSUMPTION.

1874.—Upon the publication of the June quarterly return for this year, the following suggestive criticism was offered in the leading columns of the *Times* (19 Aug. 1874) :

An interesting part of the Return, and one which is worthy of more notice from the public than it will probably receive, is that which sets forth the comparative salubrity of the chief places which are called, sometimes with unconscious irony, our "health resorts." In stating the facts, so far as figures will convey them, the Reg.-Gen. is careful to mention that "the mort. of places fluctuates from accidental circumstances, and it may happen that places unhealthy in Spring may be healthy in Summer." But he justly adds that "the general indications of the table deserve attention," and he anticipates that a ten years' rate of comparative mort. will be a still better guide to the judgment. The custom of sending invalids to die at some watering-place, which once prevailed extensively, has long fallen into desuetude, and it is probable that none of the towns mentioned could now show cause for believing that their mort. returns were unfairly weighed in this manner. It is the more striking to observe that in many of them the death-rate has exceeded even the urban average. They are arranged in four classes—first, those in which the mort. was less than 17 per 1000; secondly, those in which it ranged between 17 and 20; thirdly, those in which it was between 20 and 23; lastly, those in which it was above 23. For the names of places we must refer our readers to the Return itself, only noticing that two places, Margate and Ilfracombe, neither of them in the fourth class, are singled out to receive special condemnation. The Reg.-Gen. refers to the deplorable account given by the late Dr. Gwynne Harris of the sanitary state of Margate, and adds that "we have no evidence of any efforts to carry out the great works required to restore the town to sweetness and salubrity." Of Ilfracombe we are only told that, though in many ways charming, it has recently suffered, as Margate has done, from its neglect of the warnings conveyed to it on medical authority. It is fortunate that the towns included in the first class are sufficiently numerous to afford a large choice to intending visitors; and it may be hoped that the official warning will cause a place in this class to become, before long, an object of ambition to the local authorities of all towns to which invalids or holiday-makers are accustomed to resort.

1875.—There was read before the Social Science Asso. (Brighton) a paper by John Macpherson, M.D., Inspector-Gen. of Hospitals (retired): *What are the Advantages of English, as compared with Foreign Watering-places, and Health Resorts? What are the best Means for rendering the English Watering-places more efficient? for obviating the Dangers arising from the Occasional Introduction of Infectious Diseases, and determining the Ann. Rate of Mort. in each District?* This is a very able paper, of which, however, we can give but a brief abstract: English watering-places might be naturally classed: (1) those sought for their winter climate, and almost all of them situated by the sea-side; (2) places considered to be bracing, and to be adapted to the warmer portions of the year; (3) sea-bathing places; (4) mineral water stations. As to the first:

England has a considerable number of such places and of varied character, superior in my opinion to all Inland Continental ones (including Alpine Stations, which of late years have come into fashion) but not equal to many stations abroad, as in the Riviera, in Algiers or in Egypt.

English places of this description are superior to Inland Continental ones, owing to their winter temperature being much higher, and although they want the bright sunshine and the steady fine weather often to be found in the Riviera, and are colder than those southern stations, yet their range of daily temperature is less. The main superiority of English places consists in the drainage being better, in the houses being warmer, in there being more domestic comfort, and the hygienic arrangements of the houses being superior. The food also is more nutritious. Patients are saved long and expensive journeys, when they may not have strength to undertake them, and avoid the risks of suffering from change of diet—no inconsiderable risk in the case of delicate travellers.

As to the second class he remarks:

We have many places of this kind in Great Britain, though few of them exceed an elevation of 1200 feet, and therefore cannot be compared, at least as to rarefaction of air, with the higher and very popular stations of the Engadine. They may be breezy uplands, as likeley or Malvern, mountain valleys, as Braemar, or seaside places, as Margate or Scarborough. It is doubtful indeed whether a good deal of the reputation of Buxton does not depend on its mountain air as much as on its waters. All such places, with the exception perhaps of some out-of-the-way ones, supply the same superior comforts as the winter resorts; and their food is far better than what is usually to be procured in the Engadine, or in the Pensions so common in the Swiss mountains. English places of this kind agree with Continental ones, in having artificial baths sometimes associated with them. . . .

As to the third class:

It is in sea-bathing places, and in her great variety of them, that Great Britain is pre-eminent. They are superior to all others in natural beauty, in ranges of magnificent houses, in piers and jetties, and very general in bathing-ground. No country nearly comes up to England in these respects. The Germans have only a few, chiefly sandy islands. The Dutch are somewhat better off. The Belgians have Ostend, with its vast *digue* or sea-wall, and that very popular place Blankenburg, with its still larger *digue*. The waters of the Mediterranean are too warm in summer to afford the full advantages of sea-bathing. The French are the only people that can compete with us, and such of their sea-bathing places along the Channel, as face the north, have the advantage of being cooler than ours, which generally face the south.

We have fair arrangements now in all our chief sea-bathing places: but some of the French ones are ahead of us in their livelier social arrangements, in their Casinos and more spacious bath-houses. English sea-side places are however improving in their establishments, and even places in the far north, like Nairn, have large swimming-baths exceeding in size, we believe, anything that is to be found in Brighton. But there are no bathing places, even the best, where the necessity for improvement does not exist. At our sea-side the creation of shelter from the sun by the formation of shady avenues is one of the most pressing wants, and one not very easily supplied.

Finally, on the fourth head :

As to mineral water stations, England is undoubtedly inferior to the Continent. There is noway of getting over the absence of carbonic acid, of alkalis, and of warm springs in Great Britain. Bath indeed is our only source—that, whether in mineral constituents, in temperature, or in bathing arrangements, is on terms of perfect equality with the best waters of the same class abroad. Harrogate and Buxton, the two next most important ones, also Leamington, Cheltenham and others, all have a certain value, but not so high a one as that of many Continental springs. . . . As things are, and as they are likely to remain (for the discovery of any new and important spring is not very probable), it would be difficult to affirm that any English mineral water is superior to foreign ones of the same class. Wales, Scotland, and Ireland have, as far as is known, no wells that equal even the English ones in importance. . . .

The writer next proceeds to consider the “means of Improving Health Resorts.” Here we cannot follow him. Many of his suggestions are of a highly practical character.

There was another paper on the same subject by Dr. E. F. Fussell, Medical Officer of Health, wherein he discussed a question which had been propounded by Dr. Farr: “What are the best means of rendering the English watering-places efficient for obviating the danger arising from occasional introduction of Infectious Diseases?” This subject will fall to be considered in detail under INFECTIOUS DISEASES. The paper contains many suggestions of much value.

In the “Sanitary Record,” 31st July, 1875, there is an art., *Health and Disease in fifty English Sea-side Watering-places*, wherein the subject is handled with considerable dexterity, and the more salient facts regarding each of the places enumerated are grouped in convenient form. In the introductory obs. the writer says :

The public faith in the value of mort. statistics, notwithstanding the remarkably unfavourable criticism to which they have been subjected, continues to increase, and with respect to the health of English watering-places, the Reg.-General's ann. T. of Mort. is now eagerly scanned by all interested in them, either as residents or visitors. The value of the figures in this T. have always been to some extent depreciated by the fact that the areas taken to represent the watering-places consist of entire regis. sub-districts, the result of which is that in many cases the figures relating to a small watering-place are merged in those for a considerable rural area and pop., prob. under a different sanitary authority and medical officer of health. *The effect of this disturbing influence upon the value of the Reg.-General's figures, as a test of sanitary condition, has, however, in many quarters, been much over-rated; still it does, to some extent, militate against their acceptance as reliable evidence of comparative salubrity.*

An extended statistical Table of the leading mort. facts associated with each of the places enumerated is valuable.

This year also Dr. John Beddoe, M.D., F.R.S., read before the Brit. Asso. Meeting at Bristol a paper, *On the Death-rate of some Health-Resorts, and specially of Clifton*, wherein he contended that the conditions governing the relative mort. of towns fell under three heads, the second and third of which could not be completely divided : (1) Natural Climate ; (2) Artificial Climate ; (3) Social Conditions ; which last included the amount and distribution of wealth, the prevailing occupations of the people, the degree or prevalence of drunkenness and vice, or of the improved habits which generally come with education ; the proportions of sexes and ages in the pop. ; the aggregation of individuals into masses, as in Foundling Hospitals, large Schools, and Barracks.

Further, advantages of the three kinds commonly go together : wealth seeks the best localities and provides itself with the best artificial climate. Towns containing a large proportion of well-to-do people can fairly be compared, as to their death-rate, only among themselves. In selecting such towns for comparison the excess of young women from 15 to 35 yields on the whole the best test. On that principle the T. already given under date 1872 was prepared.

Remarking upon the T., he says, in the succeeding years the death-rate of Clifton had been smaller ; and even if all deaths of parishioners occurring elsewhere (in hospitals, etc.) were added, the rate for 1873-4 was but 16·9—the zymotic rate being but 1·4 p.a. It was doubtful whether anywhere in England an equal mass of pop. could be found yielding so favourable a rate. By Mr. Humphreys' [Reg.-Gen. Office] method the normal death-rate of Clifton would be 21·8 : so that the actual rate was 4·9 below the calculated one.

1876.—In the U. S., Dr. Charles Denison, M.D., of Denver, Colorado, pub. a paper on Climatic Change for Invalids, under the title of : *The Best Welfare of Invalids Seeking the Benefits of Climate, and how it may be realized through the Supervision of Physicians.* It was a part of his scheme to found a Climatic Asso., “composed of physicians interested in such labour, and especially representatives from the health resorts of America, devoted to the prolongation of life and the adaptation of climate to the needs of invalids. To this end it should be their work to gather statistics of all climates, familiarize themselves with the details of their special labours, and to tabulate all the results of the journeyings of invalids in America from now henceforth. Through a central council or bureau of medical advisers, communications with the rest of the medical profession, insurance companies, and invalids generally, could chiefly be carried on by means of a specially prepared medical examination or diagnosis paper, and in return advice could be given as to the choice of climate, mode of life needed, etc., etc. This asso. should always seek to prevent the useless and encourage the useful migrations of invalids, and continually watch over the journeyings of their patrons.”

The writer quoted the opinion of a prominent Ins. authority to the following effect : “The medical departments of all the leading life ins. cos. are at this time engaged in investi-

gating the subject of climatology and of chronic and malarial disease, with a zeal and care not hitherto shown. Some of them have just pub. some of the results of their study ; others have been making practical changes in the conduct of their business, founded upon such researches." This investigation was prob. due to the facts concerning location of residence disclosed during the investigation of the mort. experience of the U.S., the results of which still remain unpub.

It was part of the scheme of this writer to have introduced into the life pol. of the offices joining the Asso. a clause to this effect :

"The ins. co. promises, in case the insured becomes the victim of chronic disease affecting his prospects of longevity, which skilled medical advice, combined with climatic treatment, can greatly mollify, to furnish that skilled advice gratuitously, and also, if needed, to loan the insured a given amount on his pol. with which he may be enabled to go to the climate indicated."

And hereon it is remarked :

The idea of the Ins. Cos. prolonging the lives of their doubtful cases should not be abandoned for fear many would not faithfully follow the advice given, nor because the insured cannot *now* present any claim for such special advice or favour. The officers of the life ins. co. must *first* show that they have confidence in the basis of this movement, the facts, statistics, and skilled advice proposed as a means of prolonging the lives of their consumptive or unpromising pol.-holders. Then the insured will not be slow to accept the proffered advice ; for then there is no deception, since the prosperity of the cos. and the self-interest of the individual pol.-holders are in complete accord. This is a method of improving the bus. a life co. has already on hand, and, of course, not a plea for insuring unsound lives. Yet the minute and retrospective study of the impaired risks cos. are carrying, by such a medical bureau as is herein proposed, would prob. show that, notwithstanding their pretensions and care in the selection of risks, they have been taking practically unsound lives. But were all the members of a co. thoroughly sound when first insured, the time fast approaches when the value of the original selection is of little account, and the age of the policy becomes of greater consequence to the co. than the age of the insured. So the older the co. the more it is driven to estimate its increasing losses from consumption and chronic disease.

In the old cos., then, bearing risks on thousands of lives, a considerable per-centage of whom will sooner or later succumb to this fell destroyer, consumption, there is a field for study and the prolongation of life which should have long since been utilized.

This much space is given to the bearings of this subject on life ins., because, it seems to me, the climate bureau herein recommended should first find a most suitable beginning within the ranks of the insured, and substantial support from the cos. collectively.

Besides, as the prolongation of life would work for the life ins. bus., so might it be made to work, or make its influence felt, among all the people of the U.S.

The same idea has already been anticipated on this side on various occasions. See MEDICAL ATTENDANCE ASSO.

1879.—In the *Sanitary Record* (vol. i. new series, p. 16) there appeared : "Mort. Statis. of English and Welsh Watering-places in 1878." The art. dealt with 12 towns only, viz. Bangor, Brighton, Dawlish, Hastings, Ilfracombe, Littlehampton, Llandudno, Lytham, Sandown, Teignmouth, Torquay and Worthing. The death-rates in the urban sanitary districts of these places during 1878 ranged from 14 and 15·2 p. 1000 in Sandown and Littlehampton, to 21·2 and 23·6 in Brighton and Bangor. The lowest rates from zymotic diseases were 1·0 and 1·1 p. 1000 in Littlehampton and Ilfracombe ; and the highest 3·0 and 4·0 in Teignmouth and Llandudno. "The death-rates from fever were exceptionally high during 1878 both in Torquay and Teignmouth." The death-rates from acute diseases of the respiratory organs in these watering-places were regarded as especially instructive. The ann. rate from these causes this year, which did not exceed 0·8 and 1·3 p. 1000 in Llandudno and Littlehampton, ranged upwards to 5·0 and 6·6 in Dawlish and Brighton. The writer observes hereon :

It is dangerous to generalize and to draw conclusions from the experience of a single year, and there are good reasons for believing that the death-rate from these diseases depends almost as much upon the sanitary condition of a pop., as upon the climate of the locality in which it resides. The fatality of acute diseases of the respiratory organs calls for further inquiry : as for comparative purposes it is prob. not seriously disturbed by the deaths of visitors.

The Infant Mort., measured by the proportion of deaths under one year, called for special notice. This proportion, which did not exceed 87 and 111 p. 1000 in Ilfracombe and Sandown, ranged upwards to 157 in Llandudno, 170 in Dawlish, and 172 in Brighton. The high rate in Llandudno had been the subject of previous comment in the same pub.

In the same vol. (p. 214) there is an art. "On the Winter Climate of some Health Resorts," by John W. Tribe, M.D., wherein much valuable information is contained.

The *Lancet*, in the early autumn of this year, drew attention in a sensible art. to what are aptly termed "Sea-side dangers." The perils of disease at health-resorts were declared to be especially of two kinds—those resulting from concealed infection ; and from domestic and public insanitation. Remedies were proposed. [CLIMATE.] [LOCALITY.] [PUBLIC HEALTH.] [SANITARY SCIENCE.]

HEALTH, STANDARD OF.—Is there, can there be, any absolute Standard of Health? We think not. Under titles GOOD HEALTH and GOOD LIFE we have endeavoured to indicate the class of lives which are regarded as first class from a life office point of view. There is indeed the physiological aspect of the subject, which it may be instructive to notice ; and here we may perhaps derive some useful suggestions from the standards required in the Army and Navy.

The Army Tables classify the causes of rejection under no less than 39 heads—but many of these are very trivial, such as the loss of a tooth : important indeed in the days of biting cartridges, but not of serious consequence now ; there are also enumerated

marks from cupping, blistering, etc. For all practical purposes prob. from 18 to 20 causes only can be assigned on medical grounds. It has to be remembered that recruits and sailor boys do not usually come from those classes over whose physical constitutions the greatest care has been exercised. It will be useful to enumerate some of the chief causes of rejection.

Unsound and Delicate Constitutions.—In the total number of recruits for the army inspected in 1861, the greatest number of rejections were for small or deformed chests, and curvature of spine; next in order came unsound health generally; then malformation of lower extremities, and next varicose veins and varicocele. From these combined causes 41'80 p. 1000 were rejected.

Pulmonic and Heart Diseases.—As many as 29'44 p. 1000 have been rejected from these causes.

Scrofula and Diseases of the Glands and Bones.—As many as 18'22 p. 1000 were rejected from these causes. Skin disease was also a common cause of rejection.

Hernia.—As many as 20'76 p. 1000 on primary inspection have been rejected from this cause; although upon secondary inspection the rejections have been reduced to 10'77 p. 1000. Even a laxity of the abdominal ring is ground for rejection in the first instance, and sometimes permanently.

Further details may be obtained by consulting a paper read before the Social Science Asso. (York), 1864—*On the Prevalent Causes of Rejection of Recruits Enlisted in the West Riding and Northern District*, by J. I. Ikin, F.R.C.S. (p. 252).

Dr. Brinton, in his little book *Medical Selection of Lives for Assurance*, after reviewing the influence of specific maladies, and then the indications from more general symptoms, as the *Personal Hist.*, *Residence*, and *Hist. of Previous Diseases*, says (p. 80):

Lastly, it is the combination of the three different kinds of information about which we have been speaking that affords the basis upon which you found your opinion as to the acceptance or rejection of any given proposal. And it is just this, the most difficult part of your duty, respecting which I can give you the least assistance. For that basis may be either the sum, or the difference, of many or all of these constituents. In other words, it may be sometimes made up of a variety of favourable or unfavourable circumstances, all tending one way, and therefore leaving you little doubt that it is your duty to accept or reject respectively. But it will more frequently happen that the unfavourable circumstances are so opposed by favourable ones as to leave you in doubt whether they are not neutralized and practically removed, leaving a clear balance of facts in favour of the proposal. But even this coarse numerical illustration leaves unnoticed the chief difficulty of such decisions, namely, what degree of stringency are we to use? What is our standard of health? or, conversely, our ground of rejection?

We need not follow him; he admits there is no such standard. [DISEASED AND IMPAIRED LIVES.]

It has further to be remarked that while influences are at work by which it is anticipated that the Standard of Health may, in course of time at least, be raised, there are at the same time other influences—the result of benevolent intentions—which may be supposed to have a directly contrary tendency. Dr. Farr (*Supp. to 35th Rep. of Reg.-Gen.* 1875, p. viii) has referred to these very tersely:

Breeders reject weakly animals from their stock and thus achieve success. By the care now taken of the humblest member of the human race the weakly, it is said, survive; they marry and propagate, and thus, as some contend, the proportion of inferior organizations is raised. The imbecile, the drunkard, the lunatic, the criminal, the idle, and all tainted natures are once allowed to perish in fields, asylums, or gaols, if they were not directly put to death; but these classes and their offspring now figure in large numbers in the pop.

This part of the subject will be further considered under HUMAN RACE; LONGEVITY.

HEALTH OF TOWNS.—See HOUSES; PUBLIC HEALTH; SANITARY SCIENCE; TOWN LIFE; WATER SUPPLY.

HEALTH OF TOWNS ASSO.—Founded in 1846, on the occasion of the outbreak of Cholera in the metropolis, for the purpose of improving the Health, and with the Health, the Moral, Social, Intellectual and Religious Condition of the inhabitants of the great towns of the United Kingdom. Its proceedings were in unison with those of the Health of the London Asso., and need not therefore be further particularized.

HEALTHY CLIMATE.—See ARMY; CLIMATE; INDIA; LIMITS OF RESIDENCE; VITAL STATIS.; WEST INDIES.

HEALTHY DISTRICTS.—For the purposes of the Registration of Births, Marriages and Deaths, E. and W.—as also Scotland and Ireland—have been subdivided into Registration Districts, the returns from which are separately pub. in the volumes constituting the Ann. Reports of the Reg.-Gen. for each division of the kingdom. These returns are employed for a variety of purposes, one of which we have particularly noticed under title HEALTHY RESORTS. But before they can be effectively used for comparative purposes, they require to be submitted to certain processes of "correction," which will be reviewed in some detail under LOCALITY, INFLUENCE OF.

HEALTHY DISTRICTS LIFE T.—See ENGLISH LIFE T., HEALTHY DISTRICTS (FARR).

HEALTHY LIFE.—Under titles GOOD HEALTH, and GOOD LIFE, we have indicated the requisites which go to make up a healthy life; while under HEALTH, STANDARD OF, further considerations in the same direction arise. When a "healthy life" is spoken of, all who are engaged in the practice of Life Ins. realize the idea of what is intended; but when an attempt is made at absolute definition, some difficulty is experienced. Nor do

the law-books aid us much herein. There is one decision, however, which determines what a healthy life is not ; and this we proceed to quote as supplemental to the articles already referred to.

In the English case of *Bradley v. Collins* (1831) the short facts were these : On a sale by auction of a life interest in certain funds, the life was described in the particulars of sale to be that of a very healthy gentleman aged 48. In a subsequent part of the particulars the life was described as that of a healthy gentleman aged 48, whose life was insurable. At the sale an ins. was guaranteed at £5 5s. p.c. On a bill by the vendors for a specific performance of the contract, it was proved that shortly before the sale the vendors had insured the life at a prem. of £4 17s. 10d. p.c. ; though according to the evidence of the Actuary of the office where the life was so insured, the highest rate p.c. charged in Lond. for a healthy life of that age was £4 6s. :—*Held*, that with the knowledge of this fact, the vendors were not justified in describing the life as a healthy life, and that the guarantee did not do away with the effect of this description, though the purchaser admitted he knew five guineas to be more than the prem. usually charged. And the bill was dismissed with costs. (1 Younge's Exch. Rep. 317.)

HEART, THE.—The central organ of circulation. It is enveloped in a membrane called the *pericardium*. It is divided externally into a base, or its broad part ; a superior and an inferior surface ; and an anterior and posterior margin. Internally it consists, in man, of four cavities, viz. two auricles and two ventricles, and is thence called double.

The heart is the agent for propelling the blood. It acts the part of a pump to the system ; plays without our aid at the rate of four thousand strokes an hour, and sometimes continues in operation a century. But no organ, however marvellous in its construction and performances, can be beyond the reach of injury and disease in a body created mortal by design. The heart is the seat of numerous disorders, which destroy the power of contraction and expansion ; and when its action ceases, the blood must stop. But extreme cases are the clearest illustrations of principles, and the effects of arresting its pulsations are seen best when the event is sudden. This is no uncommon occurrence. The passions of rage, joy, grief, and fear, make themselves felt in the centre of circulation ; and these all have the power, when intense, to paralyze the heart in a moment, or even to burst it, by the agitation they create. Physical causes, in like manner, put an immediate and lasting stop to the heart. It may be done by an external blow, by the fall from a height, or by too violent an exertion. Vide *Quarterly Review* (85, p. 350), 1849.

HEART, DISEASES OF THE.—After what has been stated in the preceding art. it is not difficult to judge of the consequences which will follow from any impairment of the heart and consequent failure of its functions ; while on the other hand the blood circulating, by its action, to and from the surface and extremities of the body, very rapidly transmits to it, and from it through the system, any poisonous or any other deleterious influences these have sustained. Hence the dangers on either side are peculiar ; and from a Life Ins. point of view full of interest.

1838.—Dr. John Clendinning, M.D., contributed to the Journ. of the Statis. So. a paper : *On the Relative Frequency of Pulmonary Consumption and Diseases of the Heart*, wherein he explains that he had laid before the Royal Col. of Physicians the results of experiments and obs. relative to the physical condition of the human heart under various circumstances of health and disease, "and as my inquiries were conducted to a considerable extent according to the method in use among statisticians, and exhibit some unexpected and important results, they come, at least partly, within the scope of the Statis. Journ." And he proceeds :

That portion of my obs. to which I beg to direct your attention is the section on the Statistics of Disease of the Heart as compared with other diseases, and more especially with pulmonary consumption : of which the results tend to prove, in contradiction to the generally received opinion, that diseases of the heart are more prevalent amongst adults than phthisis, and that in both sexes the former increase in frequency, as the latter decreases, with advance of years.

It is proper to premise a few words in explanation of my mode of proceeding. With a view to determine the, as yet, uncertain conditions of the healthy heart with respect to bulk and weight, absolute and specific, nearly 400 hearts of persons of both sexes and all ages above puberty were examined with care, then measured in water for bulk and in the balance for weight, and subsequently classified according to age, sex, and disease. The result was that the healthy male heart averages for all ages above puberty about 9oz. avoirdupois in weight, and about half an oz. less in bulk, and that the dimensions of the female heart are nearly an oz. less ; it was further ascertained that in specific weight the heart varies little, appearing rather to lose in density than gain by age or disease. It appears further, from obs. made on nearly 200 subjects, that the relative weight of the heart above puberty and after death was to the whole person about $\frac{1}{160}$ th for the male, and $\frac{1}{180}$ th for the female : while with respect to the influence of age, it was proved that the heart rises in weight both absolute and relative, from infancy to extreme age ; the increase amounting in the male above puberty to between 6 and 7 p.c. in relative weight, and in the female to as much as 29 p.c. : the increase in absolute weight being striking in the males only : viz. 13 p.c.

In add. to these data for detecting vicious excess in the bulk and weight of the heart in the numerous cases in which the eye of the observer, unaided by instrumental tests, could not be trusted, he was provided with memoranda of the morbid appearances of nearly every case, and in many cases with notes taken during life. "Having been thus careful to avail myself of every precaution that occurred to me as desirable, and that I found practicable, I shall not, I imagine, be considered presumptuous in offering to the

preliminary be settled, and it appears that some organic change has taken place in the heart, it is not easy to estimate the amount of risk it will prob. involve, which experience tells us varies over a wide range, depending upon (a) the amount of local disease; (b) the constitutional power of resistance peculiar to other individuals; (c) the circumstances around the man, whether they be such as allow him to lead a quiet, peaceful, and contented life; or, momentous difference! whether their tendencies are directly the reverse.

He proceeds to remark that the physical signs of disease of the heart, or its valves, or disease of the great vessels in its vicinity, are so plain, and so distinctive to the practised auscultator, that hardly one of them can fail to attract the observation of a careful examiner; and adds:

But it is far otherwise with a number of other *general* and *indefinite* signs, which may refer to the heart, or to some other organ or diseased condition—thus *intermitting pulse* may originate with the heart itself, or be merely a symptom of dyspepsia; palpitation, with the heart, or merely as an effect of anemia, or some form of nervous disease. Awakening from sleep with a sense of suffocation, sometimes an important sign of diseased heart, may be merely an effect of *incubus*, which is itself a result of disturbed digestion; severe pain in the organ itself may be a sign of angina pectoris, or of gout, or of neuralgia. *Dyspnea* may arise from anemia, from asthma, from age, from obesity, or from disease of the lungs. Increase of dyspnea, or the production of pain, upon ascending a hill, going upstairs, being hurried, or irritated, or upon suddenly changing the position of the body, are important symptoms, but not absolutely pathognomonic of disease of the heart.

Disordered action of the heart, such as violent palpitation, will produce distention of the stomach, with flatulence, nausea, and vomiting. This combination of disordered actions, affecting two such important organs, should always awaken suspicion, and lead to careful investigation, in order to ascertain with which they originate; or indeed, whether the whole of these may not be the reflex symptoms of some other more distant source of irritation. . . .

The frequent connexion of diseased heart with some form of rheumatism, especially of acute rheumatism as its antecedent, should lead us to look upon with suspicion, and to examine with minute care all those individuals whose personal hist. has shown a rheumatic diathesis; the more so, if this had also been manifested in other members of the same family.

The hereditary character of disease of the heart has already been spoken of under title DROPSY. [HEREDITARY DISEASES.]

1868.—Mr. Alfred Haviland read before the Social Science Asso. (Birmingham) a paper on the *Geographical Distribution of Heart Disease, especially in relation to Sea Air*, which he illustrated by a series of ingeniously coloured diagrams, whereby the intensity of the mort. from this cause was made apparent to the eye at a single glance. These charts illustrated the distribution of 236,973 deaths from this cause occurring in E. & W. during the ten years 1851–60. This mode of treatment together with the results of the inquiry have since been expanded into a work which we shall notice under date 1871. Upon this occasion he observed that neither geological site, water-supply, temperature, occupation, food, clothing, nor hereditary tendency, so far as the present generation is liable to be predisposed to heart disease from its Scandinavian, its Saxon, or its Celtic origin, would account, as general causes, for the strange geographical groupings of the proportional mort. from the disease under consideration. (See 1869.)

1869.—Dr. Adams Allen, M.D., in his *Medical Examinations for Life Ins.* (5th ed. Chicago), says, under title of “Cardiac Disease”:

Organic disease of the heart positively excludes. Physical diagnosis is indispensable here, but it should be recollected that as a rule, while the healthy heart may, from accidental causes, give an abnormal sound temporarily, the heart diseased to such an extent as to reject, can not, for any continuous period, give forth healthy sounds. Abnormality in rhythm or impulse may depend solely upon temporary causes, and so, also, abnormality of sound; but when these are present, the parts should always be re-examined. Variations in rhythm or impulse may be individual peculiarities, and there are evidences that varied sounds may also depend upon idiosyncrasy; but the safer rule is never to accept the party, unless the natural sounds may be heard. When from any cause cardiac disease has *frequently* occurred, and abnormalities are present, the party should be turned over to invalid Cos.

In a later portion of the work there is much information of practical value to the Life Office Examiner.

This year Mr. Haviland contributed to the British Medical Jour. a paper, *Sea Air and Heart Disease*, wherein he showed that the mort. from this cause was influenced by propinquity to the sea-coast, and the ventilation of the country by the means of the great natural inlets which admitted into the Midland districts the prevailing sea-winds. The average ann. number of deaths to every 10,000 persons living was 12·7 throughout England, and this number he made the standard of comparison. All districts, or groups of districts, having a mort. at or below this number, were coloured *red*, and all above it *blue*. The map of E. and W. so coloured plainly showed, first, that the *red* or *minus* average districts predominated along the coast-line, and secondly, that they stretched inland wherever an inlet presented itself, which was in the axis of the prevailing winds and the incidence of the tidal wave. The east coast, with its three great inlets of the Humber, the Wash, and the Thames, and comparatively low coast, had a mean mort. of 11·0, or 1·7 below the general average. The western coast, with its great inlets of the Bristol Channel, Cardigan Bay, the estuaries of the rivers Mersey and Dee, Morecambe Bay, and Solway Frith, besides the innumerable inlets along the courses of the Welsh rivers which flow into the St. George's Channel and the Irish Sea, had a mort. of only 10·4, or 2·3 below the mean; whilst the south coast, which was characterized by precipitous cliffs, by having no great inlet, and the mouths and courses of its rivers, as a rule, at right angles to instead of in the axis of the tidal wave and prevailing winds, had a relatively high mort., being 13·3, or 0·6 above the mean. Again, when the coastal are

compared with the inland districts, a remarkable contrast presents itself. For instance, if a line be drawn from Berwick to the Isle of Purbeck, corresponding to the 2° west longitude, it will cut through thirty-two *plus* average districts out of a total of forty-four—the mean mort. of which is 16·0 or 3·3 above the average—in other words, an increase in the number of deaths to the extent of more than one quarter, a rate which would, in round numbers, have represented in the 10 years 60,000 more deaths than actually took place, had the mort. not been modified by the *minus* average districts along the coast and up the great inlets from the sea.

The author next proceeded to show that the geographical distribution of heart disease taught us on a grand scale the direct advantages of free and unobstructed ventilation.

Having already given a general idea of the coast-line, Mr. Haviland drew attention to the inland *minus* average or *red* groups, which, without exception, follow the courses of the great sea-inlets; some of these penetrate many miles inland, whilst others stretch from one side of England to the other, forming broad belts of red groups which stand out in remarkable contrast to the surrounding *blue* districts, which are characterized by a high mort. 1. A great horizontal belt stretches across England, from the Irish Sea to the German Ocean, and is uninterrupted by a single *plus* average district; on the west, it follows the course of the river Ribble to its source, and receives the full indraught of the westerly gales; on the east, it follows the river-courses of the Humber, the Ouse, the Wharfe, and the Aire to their sources, and receives the full afflatus of the south-easterly winds which blow over the German Ocean; the mean mort. of this belt was 11·3 or 1·4 below the general average. 2. The next great inland group extends inland from the estuaries of the Mersey and Dee, along the red sandstone vale of Shropshire and Staffordshire until it meets the Severn and Avon group, which it joins, and with it and the *red minus* average districts along the coast of Wales completes a remarkable *red* cordon around the great *plus* average group of Herefordshire, Worcester-shire, Shropshire, and Brecknockshire. This group receives the full afflatus of the north-west wind which, when it prevails, sweeps up this vale, which is also influenced by the flux and reflux of the sea and land breezes during the summer. The mean mort. of this group was 11·0, or 1·7 below the average. 3. The next is the Severn and Avon inland group, which runs up the course of these rivers from the Bristol Channel to the centre of England, whence it joins the inland group of the Wash, and thus forms a diagonal belt of low mort. from sea to sea. Through the Wash this extensive area is ventilated by the north-easterly winds, and through the Severn and Avon by the south-westerly, which blow up the Bristol Channel, besides enjoying the bi-diurnal change consequent on the flux and reflux of the tidal wave and the sea and land breezes in the summer. The mort. along this group was 11·9, or 0·8 below the average. 4. The next great inland group of *minus* average districts is that of the Thames, which extended from the coasts of Essex and Kent to Kingston in Surrey, and had a mean mort. of 11·1, or 1·6 below the average. In this group was seen the great influence of the sea-winds, which are guided up the river by the hills which flank its banks, and the bi-diurnal change of air consequent on the tidal flow and ebb.

In conclusion, the author urged the necessity of availing ourselves of the great practical lesson taught us in these facts, by making proper use of them in the construction and reconstruction of our streets, the ventilation of which is of such paramount importance to the public health. He strongly pointed out that, as the inlet of the Thames is the great source of health to London, we should be very jealous how we allow its embankments to be encumbered by public buildings, which must act as barriers to the genial influences of the tides and the prevailing winds which sweep over the river, and would, if allowed to do so, blow up the innumerable narrow streets to the north of the Strand, and cleanse them of the air-sewage which hangs about the alleys, the *culs-de-sac*, the quadrangles, and narrow streets of that wretched group of districts.

The author had prepared a coloured map of London, which showed that the mort. from heart-disease was greatest in those districts which were prevented from having their streets flushed by the prevalent winds on account of the defective plan of the streets, which were so built as to exclude the healthful influence of our natural street flushers. Instead therefore of building upon the banks of the Thames, it would be more in accordance with the practical science of the present day, and the dictates of common sense, to provide inlets to admit fresh air to the densely populated districts which, from the defective arrangement of their streets, were now excluded. Street ventilation was a subject of great importance, and could only be carried out successfully by studying the several elements of our climate, and especially the *direction* and *force* of the prevailing winds. We had an accumulation of facts and statistics upon this subject, which should be used for the public good.

1870.—In the 33rd Rep. of Reg.-Gen., Dr. Farr drew attention to the increasing mort. in E. & W. from diseases of the heart. In the earlier reports they had ranged from 3562 to 4925 p.a. In 1850 they had increased to 11,536; in 1860 to 18,758; and in 1870 to no less than 25,259. That this large increase was due in part to modified classification will be made apparent. The deaths ascribed to aneurism—a well-defined affection of the great arteries, but which was not formerly detected with so much certainty

as now—had been in 1838 returned at 119, in 1850 at 286, in 1860 at 368, and in 1870 at 627. Dr. Farr, after reference to these facts, says :

Simultaneously with the increase of death by heart disease there was a decrease of death ascribed to dropsy; and the fact to bear in mind is that dropsy is one of the striking, obvious symptoms of heart disease. The early Mort. T. previous to the inspection of the organ after death, when the knowledge of pathology was in its infancy, recognized no such thing as aneurism, pericarditis, hypertrophy, or any of the other forms of disease of the circulating system: dropsy on the other hand was one of the earliest diseases named. The circulation of the blood is so essential to the life of every organ—the brain, for example—that its derangement may give rise to diseases of those organs, such as apoplexy, much more obvious to the eye, than the heart sounds are to the ear. It is fair then to assume, that a part of the increase of heart disease in England is only apparent, and is due to improved nomenclature, to advancing diagnosis; and what was called dropsy is called hypertrophy of the heart; and so in other cases.

Dr. Quain, M.D., had about this date been investigating this question, in the preparation of the Lumleian Lectures delivered before the Royal College of Physicians; and he arrived at the conclusion that there *had been within the last 20 years an actual increase of heart disease in England*. The heart, excited by any violent affections, by athletic efforts, by anxiety, and by extraordinary demands upon its forces, is believed by Dr. Quain (as also by other physicians in extensive practice) to have become more frequently the seat of disease, in consequence of the wear and tear of bus., and of the increased mental activity of the age. "Their impressions, derived from the study of particular cases (says Dr. Farr), are confirmed by the general results; but it is certain that the strain on the minds of the classes who consult these eminent physicians is not shared by the great bulk of the pop. that fill up the returns; and the problem can only be definitively solved by a careful analysis of the cases in connexion with the occupations of the people."

The increase in the deaths ascribed to apoplexy, paralysis and insanity, is also striking (33rd Rep. p. 406).

1871.—Mr. Alfred Haviland pub. : *The Geographical Distribution of Heart Disease and Dropsy in E. and W.*, illustrated with a large coloured map. The facts contained herein are but an elaboration of those already given under date 1869.

1873.—The subject of heart disease amongst seamen received further attention, at the instance of Mr. Nathan, assistant-surgeon of the Royal Naval Hospital at Haslar, who reported upon 1572 cases of disease of the heart admitted into that hospital in the year 1871, and stated that from the yearly entries for the last 10 years heart disease appeared to be on the increase in the Royal Naval service. Among the probable reasons for this increase he mentioned the augmentation of the number of drills, such as the institution of the running drill; the system of weekly payments in the Marine divisions, giving the men more opportunity for a complete debauch; the increased size of naval ordnance; the greater distance aloft in some of the ironclads, the call of the boatswain's pipe entailing a much more lengthened journey than formerly from the lower deck to the top or crosstrees; and that while there had been an increment in the size of ships, a diminution of their crews has occurred, and therefore a greater amount of work falls to the lot of each person. The men most frequently mention heavy gun drill as productive of the disease; but there was prob. more than one cause in operation. Tobacco, alcohol, and dissipation may be the combined agents in one case; cachexia the predisposing, and heavy drills the exciting cause in another; dyspepsia and debility in a third. It appeared to be a general idea that a potent cause of heart disease among soldiers is to be found in the interference with the circulation occasioned by the tightness of the tunic and the pressure of belts and straps. Mr. Nathan stated that his experience led him to believe that, with the Marines, more prolific causes of the disease must be in operation. The men themselves generally agree as to their tunics or belts not causing an uncomfortable amount of compression; at heavy gun drill neither belts nor knapsacks are worn, and at running drill only occasionally, neither could the present stock be accused of embarrassing the cervical vessels. He observed that an instance where the dress does visibly impede the circulation is seen in sailors; their trowsers are supported entirely by the tightness with which in the upper part they encircle the body, and this is materially increased by the closeness with which their flannel shirts, serges, etc., are stuffed into them. Hence varix of the lower extremities and of the spermatic veins is a common disease among sailors; but it did not appear that even with this degree of tension the arterial circulation was interfered with. If compression of the chest is so fruitful a source of cardiac disease, it is surprising that it does not predominate among women instead of being nearly thrice as common among males. Mr. Nathan was of opinion that it is not among ladies of fashion that tight lacing prevails so much, perhaps, as among the labouring female population, and, moreover, their stays are furnished in front with a long unyielding wooden or steel lath; the amount of compression is much greater than that exerted by any belts worn by a Marine, and the women perform their work enveloped in this cuirass, though certainly their toil is in general more equally distributed throughout the day, and is not of the short, violent, periodic description to which our sailors and marines are exposed. On the whole, Mr. Nathan came to the conclusion that one of the greatest steps towards the diminishing of heart disease in the naval service would be an earnest endeavour to improve the morals of the men, and save them from the excess in spirituous liquors, tobacco, and dissipation, in which they are apt to indulge. He

remarked that stokers appear to be more exempt from disease of the heart than any other class serving in the navy, and he attributed this immunity to the high temperature in which they work, causing a great increase in the cutaneous excretions and exhalations and in the activity of the respiratory process, and relieving the circulatory system in a superior degree. Heart disease, so far as it prevails among them, seems chiefly to take its rise from rheumatism, a disease to which they are eminently subject.

It seems important here to state that as long ago as 1836, Dr. Hunter directed attention to the frequency of heart diseases in the army, and since that time Nicholson, Parkes, Aitken, and other practising physicians have done the same. Statistics and exact observations show that the cause of the large number of heart diseases among soldiers is not to be sought in rheumatism, affections of the kidney, or even syphilis, but in violent bodily exertion. The originating cause is found in the mode of life the soldiers lead. This view is confirmed by Peacock, who has made a study of the frequent appearance of heart diseases among miners, and established beyond doubt that the disorders of these extremely robust and vigorous men do not result from the causes which are ordinarily assumed, but directly from the prodigious toil to which they are forced to submit.

1874.—An essay was pub. by Dr. Seitz, of Zurich, in the *German Archives of Clinical Medicine*, in which he demonstrated that heart diseases almost always originate in some excessive bodily exertion, except where they can be traced to some hereditary tendency. In these diseases symptoms, which at first can hardly be discerned, gradually become more and more distinct as time passes by. The diminished activity of the heart becomes externally perceptible. On more thorough investigation the heart is found to have become enlarged, the throbbing of the valves and a rubbing can be heard. It will also be found that the walls of the heart have become thickened, and its chambers have grown wider. A fatty or lumpy degeneration of the cellular tissue has taken place. When heart diseases originate in undue exertion, and terminate fatally, it is generally through embolism, that is, clots of blood are formed which create a stoppage and prevent a circulation of the blood, especially in the small veins which ramify in the brain.

In such cases medical prognostications are almost always extremely unfavourable, and Life Ins. Cos. ought to take all possible care not to insure the life of any person so situated. There does not, however, seem to be any precaution which it is practicable to take besides refusing to insure all persons whose business is such as ordinarily to call for extraordinary physical effort, except when their physical constitutions are such as to qualify them for it. The possession of a robust physical organization is doubly important in such callings, for in them the want of it would not only imply the usual diminished power of resistance to disease in general, but a special and peculiar liability to heart disease.

It should be mentioned that Dr. Seitz had, in the preparation of his work, consulted the works of a number of contemporaries who have given attention to this subject; hence his views derive much additional force.

1879.—Science has more recently been brought to aid in testing the action of the heart. Dr. W. B. Richardson this year submitted to the Royal So. an invention, which he designated the "Sphygmophone," wherewith he transmuted the movements of the arterial pulse into loud telephonic sounds. Patients a considerable distance away may have the action of the heart tested by means of this invention.

[ANEURISM.] [ANGINA PECTORIS.] [DROPSY.] [EMBOLISM.] [GOUT.] [HYPER-TROPHY.] [PERICARDITIS.] [RHEUMATIC FEVER.] [RHEUMATIC GOUT.] [SUDDEN DEATH.] [VALVULAR DISEASE.]

HEART DISEASES, DEATHS FROM (Class, LOCAL; Order, *Diseases of Organs of Circulation*).

—The deaths regis. under Heart Disease, etc., should no doubt to some extent be distributed over the deaths from Pericarditis, and Aneurism. They show a very considerable increase in later years. In ten consecutive years they were as follows: 1858, 15,490; 1859, 16,146; 1860, 17,815; 1861, 17,148; 1862, 17,777; 1863, 18,490; 1864, 21,311; 1865, 21,207; 1866, 21,197; 1867, 21,698; showing a variation from 804 p. million of the pop. in 1858, to 863 in 1862, 1035 in 1864, to 1022 in 1867. Over a period of 15 years ending 1864 the deaths averaged 775 p. million. Over the 5 years ending 1864, 919.

The deaths in 1867 were: Males, 10,529; Females, 11,160. Of the males, 113 died under 5; 153 between 5 and 10; 187 between 10 and 15; 227 between 15 and 20; 245 between 20 and 25; 786 between 25 and 35; 1140 between 35 and 45; 1682 between 45 and 55; 2288 between 55 and 65; 2490 between 65 and 75; 1103 between 75 and 85; 113 between 85 and 95; and 2 over 95. Of the females, 111 died under 5; 146 between 5 and 10; 222 between 10 and 15; 260 between 15 and 20; 301 between 20 and 25; 794 between 25 and 35; 1244 between 35 and 45; 1675 between 45 and 55; 2415 between 55 and 65; 2702 between 65 and 75; 1190 between 75 and 85; 99 between 85 and 95; and 1 over 95.

But in view of the important bearing deaths of this class have upon Life Ins. interests, we propose to devote to the inquiry a wider range of investigation than is found necessary in some other cases.

HEART DISEASES, DEATHS FROM.

T. Showing the Deaths and Death-Rate from Heart Disease in the Four Quinquennial Periods between 1851 and 1870.—MALES AND FEMALES, E. & W.

Periods.	MALES.									
	DEATHS AT DIFFERENT AGES.					ANN. RATE PER 1000 LIVING.				
	All Ages.	0-20.	20-45.	45-65.	65 and Upwards.	All Ages.	0-20.	20-45.	45-65.	65 and Upwards.
1851-55	32,617	4,416*	6,454†	11,873	9,874	725	177*	553†	1829	507
1856-60	39,678	3,433	8,723	14,629	12,893	836	156	529	2137	627
1861-65	49,738	3,942	11,128	18,662	16,006	993	169	605	2583	738
1866-70	57,687	4,296	13,089	21,123	19,170	1085	174	709	2757	833

Periods.	FEMALES.									
	DEATHS AT DIFFERENT AGES.					ANN. RATE PER 1000 LIVING.				
	All Ages.	0-20.	20-45.	45-65.	65 and Upwards.	All Ages.	0-20.	20-45.	45-65.	65 and Upwards.
1851-55	33,497	4,784*	6,719†	12,165	9,829	713	171*	530†	1780	423
1856-60	41,095	3,610	9,349	14,930	13,206	825	164	516	2061	536
1861-65	51,243	4,153	11,025	18,897	17,168	970	178	573	2454	657
1866-70	60,003	4,632	12,711	21,588	21,072	1067	187	621	2632	758

* These figures relate to the ages 0-25, as in the Regis.-Gen. abstracts for the quinquenniad 1851-55 the deaths of persons aged 15-25 were classified together.

† These figures relate to the ages 25-45 for the 5 years 1851-5, as it was not possible to obtain separately the deaths of persons aged 15-20 and 20-25 during that quinquenniad—*vide* 33 Rep. p. 440.

The 10th Rep. of the Registrar of Births, Marriages, and Deaths for *Scotland*, showed that during the 10 years 1855-64 there had died of diseases of the heart and blood-vessels 24,203 persons—constituting 3940 p.c. of the deaths from all causes: being 841 deaths ann. in every million of the pop. Of the total, 22,691 were attributed to heart disease, 760 to pericarditis, and 752 to aneurism.

Turning now to the experience of individual Life Offices, the following results are obtained.

Gresham Life.—In the Rep. pub. in 1868, by the medical officer of this So., into the causes of death producing the first 1000 claims in this Co., it was shown that heart disease had proved the 6th most fatal cause—34 deaths being registered against it. No remarks were offered. The deaths from pericarditis (11), and from aneurism (7), endocarditis (5), and angina pectoris (5), were separately returned.

In the Rep. of the Medical Officer on the second 1000 lives which had terminated in claims, deaths from heart disease occupied the 3rd place in the order of greatest mort. accounting for 71 deaths—phthisis (145) and apoplexy (78) only being in advance of it. The medical officer remarked thereon:

A very considerable increase has taken place in the deaths from heart disease, the number having risen from 62 to 95 [including pericarditis 10, endocarditis 7, angina pectoris 4, and aneurism 3]. This large increase appears to be mainly due to fatty degeneration of the heart. By the study of a Table constructed to show the influence of occupation as a predisposing cause to certain forms of disease, it will be noticed that pecuniary embarrassment has a prejudicial influence over the heart's action; and the financial difficulties through which the commercial classes have passed during the last few years have no doubt greatly tended to this large increase of heart disease.

North British.—This Co. sustained in the first 37 years of its existence (1823-60) 103 deaths from disease of the heart—being 7.90 p.c. of the entire mort. The average duration of the pol. had been 12 years and 8 months; whereas the average "expectation" was 24.72. These lives had therefore lived on an average but half their term.

Prudential (Industrial Branch).—In the Report upon the *Mort. Experience of the Prudential Assu. Co. in the Industrial Branch for the Years 1867, 1868, 1869, 1870*; with *Obs. by Henry Harben, Sec. to the Co.*, pub. 1871, the deaths from diseases of the heart were classed under a variety of heads, as shown in the T. on top of p. 55 opposite:

In the obs. accompanying the Tables, of which the preceding is an abstract, it is remarked:

Above the age of 5 years the diseases of the circulatory organs show most favourably for females in *Lancashire*, and for males in *Scotland*; and most unfavourably for females in the Metropolitan District, and for males in the S. Eastern Counties. . . . Town and country show an equal proportion of deaths from diseases of the nervous system and the organs of circulation. . . . Diseases of the circulatory organs appear to carry off most furnace-men, engine attendants, butchers, factory operatives under 20 years of age; seamen and tailors being next in order.

These are the only available returns affecting the industrial classes.

Scottish Amicable.—The experience of this office from 1826-60, pub. in 1862, gave 53 deaths from disease of the heart, of which 3 occurred between ages 25 and 35, 5 between 35 and 45, 18 between 45 and 55, 13 between 55 and 65, 14 at "65 and upwards." There were also 4 deaths from pericarditis, 1 from 35 to 45, 1 from 45 to 55, and 2 from 55 to 65. It was found out of this total of 57 deaths from these causes that 14, being 25 p.c., had suffered from rheumatism in some form before "acceptance." [RHEUMATISM.]

Deaths from Diseases of the Heart, showing the Sex, Ages at Death, and Proportions of Males and Females Dying—PRUDENTIAL.

CAUSES.	Males.	Females.	Under 25—both sexes.	Over 25—both sexes.	Proportional Number in 10,000 Deaths.	
					Males.	Females.
Pericarditis	5	14	14	5	3	8
Hypertrophy of Heart	8	7	2	13	5	4
Syncope	5	10	.....	15	3	6
Aneurism of Heart	9	3	.....	12	5	2
Valvular Disease of Heart.....	11	23	5	29	6	13
Fatty Degeneration of Heart	7	5	.....	12	4	3
Unclassed Diseases of Heart, as Ossification, Rupture, etc.	15	19	10	24	9	11
Unspecified Diseases of the Heart, uncomplicated	301	368	131	538	173	207
Followed by Dropsy	139	197	53	283	80	111
" Bronchitis	23	25	3	45	13	14
" Congestion of Lungs	12	6	5	13	7	3
" Various Lung Affections	20	19	8	31	11	11
" Pneumonia	4	4	2	6	2	2
" Asthma	5	3	1	7	3	2
" Brain Affections	13	14	3	24	3	8
" Liver	5	2	1	6	3	1
" Kidney	8	5	—	13	5	3
" Various Diseases	9	13	10	12	5	7
Diseases of Aorta	11	4	1	14	6	2
Hæmorrhage	11	25	7	29	6	14
Pyæmia and Leucocythæmia.....	18	14	9	22	10	8
Hydrothorax	20	7	9	18	12	4

1862.—Dr. J. G. Fleming, M.D., in his *Medical Statistics of Life Assu.*, pub. this year, gave the following T. of Mort. from "Diseases of the Heart and Blood-vessels" :

Ages.	No. of Deaths from Diseases of Heart, etc.			PER-CENTAGE OF DEATHS FROM DISEASES OF HEART, ETC.								
	England—Average of 7 Years—1846-54.	Gotha So.	Scottish Equitable.	On Lives at Risk.			On Deaths from all Causes.					
				England.	Gotha So.	S. Equitable.	England.	Gotha So.	S. Equitable.	S. Widows' Fund.	Standard.	North British.
15 to 25	840	0	0	·024	·000	·000	2'95	0'00	0'00	...	...	...
25 " 35	1,006	2	5	·036	·110	·034	3'48	1'33	4'46	...	...	...
35 " 45	1,306	13	8	·066	·028	·041	5'15	2'62	3'84	...	...	...
45 " 55	1,866	21	20	·123	·051	·161	7'03	3'24	11'23	...	...	...
55 " 65	2,420	31	17	·240	·145	·299	8'02	4'31	12'31	...	...	...
65 " 75	2,416	2	15	·417	·034	·800	6'65	0'44	12'50	...	...	...
Total...	9,962	69	65	·087	·051	·115	5'60	2'79	8'40	11'00	10'00	9'36
Total with One-Third of Cases of Dropsy Added.	12,541	146	67	·110	·109	·119	7'05	5'92	8'66	11'27	10'31	10'51

Note.—The mort. of the *Equitable So.* from its imperfect nosological arrangement did not admit of being brought into the T. The following obs. were offered hereon :

On examining the line marked total of the foregoing T., the much greater mort. from diseases of this class among the members of the British Institutions than among the gen. pop., or the members of the *Gotha*, at once attracts attention. This is undoubtedly owing to dropsy being classed in the Reg.-Gen. Reports, and also by the *Gotha So.*, as an independent disease, instead of being ascribed to disease of the organs on which it almost invariably depends. As already explained, I presume that one-third of the cases of dropsy are a consequence of disease of the heart, and I have appended a line to the T. showing the result with this proportion added. This it will be seen greatly modifies the discrepancy, and I have no doubt is the only correct explanation of it. [DROPSY.]

Scottish Equitable.—In the Rep. on the Causes of Death in this So. during the 33 years 1831-64 prepared by Dr. Wm. Robertson, M.D., F.R.S.E., 1865, those resulting from diseases of the circulation were stated as having been 11'850 of the entire deaths. After having said (p. 7), "There can, however, be no doubt that the mort. from 'Dropsy' must in most Mort. T. be overstated, and that from 'Disease of the Kidney,' 'Disease

of the Heart,' and 'Disease of the Liver'—the most common causes of dropsical symptoms—understated," he proceeds in more detail (p. 34) :

Of "Disease of the Heart," including one case of "Arteritis," there have died 164 males and 22 females—being 186 in all. This mort. is certainly heavy, but not more so than might have been fairly calculated on. Indeed, as in the future progress of the So., as the average age of the assured becomes higher, so prob. will the mort. from heart complaints become even greater than at present. Reference to the cols. of T. (C) will show that, of those who have died of heart disease, 88, i.e. 47·3 p.c., were aged 60 years and upwards; while the deaths from consumption in persons of 60 and upwards were only 11, i.e. 5·2 p.c. on the total deaths from that cause. At ages under 40 years again, the respective numbers are 14, or 7·5 p.c. on the fatal diseases of the heart, against 114 or 54·3 p.c. on the total deaths from consumption. The above numbers make it very apparent that it is after middle life that the lethal influence of heart disease chiefly operates.

In the 4 years ending 1868 the deaths from heart disease were 93, being 14·133 p.c. on the deaths from all causes; the mean age at death being 59·34 years.

Scottish Widows.—The mort. experience of this So. for the first 37 years of its existence, 1815–52, showed 101 deaths from heart disease, being 7·58 p.c. of the entire mort. of the period. In the 7 years 1853–60 the deaths from this cause were 122—being 12·51 p.c. of the total mort. of the septennium, and an increase of 4·93 p.c. The average expc. of these lives was 25 years 8 months. Their average surviving 17 years 11 months. Dr. Begbie, the chief medical officer of the So., remarked hereon :

This at first sight may appear discouraging, but is satisfactorily accounted for. Chronic disease of the heart is, perhaps, more than any other, the disease of old age; and hence we find on a reference to our T. that of these 122 deaths, 22 only occurred before the age of 50; thus leaving 100 to be distributed over the four consecutive decennial periods, in the proportions following : 28 between 50 and 60; 41 between 60 and 70; 25 between 70 and 80; and 6 beyond 80 years of age. Thus advancing years and mature age, which have brought this source of mort. to so high a figure, enable the So. to show, in comparison with younger associations, a great improvement in the surviving of its risks, and a much less serious loss in the bus. of Life Assu.

In the septennium 1860–66 there was again a considerable increase, viz. 221 against 135 in the previous septenniad. Chronic disease of the heart accounted for 203 of these; aneurism for 15, pericarditis 3—bearing a proportional increase to the numbers at risk compared with former septennial returns. The average expc. of the 203 lives was 26; their average endurance 19 years 7 months.

The following T. exhibits the mort. from chronic disease of the heart compared with that from all other causes during the septennium, and the p.c. of death at different ages :

Age at Death.	From all causes.	From Heart Diseases.	Ratio p.c.
Between 20 and 30	41	0	0·00
" 30 " 40	139	8	5·75
" 40 " 50	241	29	12·03
" 50 " 60	350	54	15·43
" 60 " 70	338	66	19·52
Above 70	289	46	15·91
Total	1398	203	14·52

Dr. Begbie remarks hereon :

Our records in regard to the manner of life and death of the subjects of heart disease must ever be imperfect; still sufficient is known to make the history both interesting and instructive. It was known, for instance, that in effecting ins. 21 had been the subjects of rheumatic fever or rheumatic gout; that 3 more were hereditarily predisposed by near relationship with sufferers from the disease; that 7 had suffered from gout, and 6 others were predisposed to it, while 10 were descended from parents who had died of heart disease. *An effort had been made in 9 instances to cover the increased risk by extra prem.*

The form of lesion considered to have been the cause of death has in too many instances not been specified: in 11 returns, valvular disease; in 9, dilation; in 4, hypertrophy; in 5 angina pectoris; in 3, rupture; and in 1 embolism; while out of proportion fatty degeneration in 15 cases has been assigned as the cause of death. That event was in 23 individuals sudden, and we are left to conjecture how and what part of the organism was affected. In 9 cases only a post-mortem examination revealed its seat. Dropsy in 37 cases accompanied the fatal lesion; while kidney, liver, and lung disease, especially bronchitis, in numerous instances added to the complications which ultimately ended in death.

The following T. shows the mort. experience of this So. from heart disease in a collective form from 1815 to 1866, compared with the deaths from all causes :

Age at Death.	From all Causes.	From Heart Disease.	Rates p.c.
Between 20 and 30	124	1	0·80
" 30 " 40	437	25	5·72
" 40 " 50	694	59	8·50
" 50 " 60	914	117	12·80
" 60 " 70	852	138	16·19
Above 70	650	86	13·23
Causes not ascertained	34	..	..
Total	3705	426	11·49

In the septennium 1867-73 the deaths from disease of the heart were 311, of which 299 were males and 11 females. The mort. from diseases of the organs of circulation amounted to 14·2 of the entire mort.; but heart diseases only constitute one class of these. In 8 of the 311 cases only *post-mortem* examinations had been made. In 23 instances death was stated to have occurred "suddenly," or the person was "found dead." In 26 other cases the certified cause was "fatty degeneration;" in 12 "angina pectoris;" in 23 "valvular disease;" in 2 "endocarditis;" in 3 "gouty in connexion with gout;" in 4 "rheumatic, or connected with rheumatic fever;" in 6 "dilation;" in 4 "hypertrophy;" in 1 "softening of the heart;" in 1 "weak heart;" in 2 "disease of heart with profound anæmia." Thus 84 deaths are accounted for; the remaining 227 were simply returned as "disease of the heart."

In 40 of the total cases, the disease of heart is stated to have been complicated with dropsy. Disease of liver, congestion of lungs, pulmonary apoplexy, bronchitis and disease of the kidneys, were reported as complications in several cases.

Of the ages at death—2 were under 30 (*viz.* 1 at 18, the other at 23); 15 between 30 and 40; 35 between 40 and 50; 70 between 50 and 60; 110 between 60 and 70; 68 between 70 and 80; and 11 between 80 and 90.

79 out of the 311 exceeded their *expec.*, and 14 others exactly reached it, leaving 218 who fell short of the period. Of the 79 who exceeded their *expec.* 1 did so by 21 years, 1 by 17, 2 by 15, 2 by 13, 2 by 12, 3 by 11, 4 by 10, 5 by 8, 7 by 9, 5 by 6, 6 by 5, 8 by 4, 10 by 3, 11 by 2, and 12 by 1. Of these same 79, 11 were merchants, 6 gentlemen of independence, 4 manufacturers, 8 clergymen, 4 writers to the signet, 7 solicitors, 2 physicians, 2 farmers, and 2 were females.

Of the 14 who equalled their *expec.*—1 had been insured 34 years; 1, 33 years; 1, 31 years; 1, 30 years; 1, 28 years; 3, 26 years; 1, 23 years; 1, 22 years; 1, 21 years; 1, 15 years; 1, 14 years; and 1, 10 years. Amongst them there were 3 females and 2 clergymen.

Of 218 who fell short of their *expec.*, 12 did so by 1 year, 15 by 2 years, 15 by 3 years, 8 by 4 years, 18 by 5 years, 14 by 6 years, 9 by 7 years, 6 by 8 years, 10 by 9 years, 8 by 10 years, 5 by 11 years, 4 by 12 years, 7 by 13 years, 9 by 14 years, 4 by 15 years, and the remainder by more than 15 up to 42 years. Of these 6 were females, 5 commercial agents, 7 clergymen, 26 merchants, 6 drapers, 4 clerks, 5 solicitors, 3 pawnbrokers, 11 medical men, 6 gentlemen of independence, 3 naval officers, 3 gardeners—the remainder (under each of the three divisions) being made up of the ordinary occupations of life in the single number.

In 15 of the total cases, an extra prem. was charged at the time of acceptance.

Standard Life.—The experience of this Co. during the 20 years ending 1845 gave a mort. of 14 lives from heart disease (13 males and 1 female), but what proportion this bore to the entire mort. is not stated. In the 5 years ending 1850 the mort. from diseases of the heart was 16, and from diseases of the great vessels 5—being 5·4 p.c. of the total mort. Dr. Christison offered the following comments thereon:

... In the preceding T. we have 21 deaths put down to these causes, . . . and if it be considered that several of the deaths ascribed to dropsy were really occasioned in all prob. by disease of the heart, we may safely increase the number to 26, or 9 p.c. of the whole. One of the 21 ascertained cases proved fatal between the ages of 30 and 40; 4 between 40 and 50; 8 between 50 and 60; 5 between 60 and 70, and 3 after 70. Hence diseases of the heart among persons assured is a disease rather of advanced life than of any other period. The whole 21 conjointly outlived acceptance 193 years, instead of 467 years: their conjunct *expec.* of life consequently, on an average, about two-fifths of the natural term. Two very nearly reached that term and one exceeded it by 3 years.

As the present head accounts for so large a proportion of deaths, it may be well to analyze the cases somewhat particularly. A considerable proportion appear to have been select lives at the time of acceptance. In respect to 4, the information is defective. Of the remaining 17, there are 3 as to which every circumstance was highly favourable; and in 8 more they were either favourable, or at least fair. In 6, however, the facts ascertained at entry would now be thought to render the lives more or less doubtful; and in 1 of these the circumstances were so unfavourable that had they not been concealed from the directors, the life would have been rejected. . . . It might not exactly appear, therefore, from these results that any great diminution in the casualties from disease of the heart and great vessels is to be looked for in the future from the improved methods of inquiry now followed in valuing lives which are proposed for assurance. But it must be considered that the advances which have in recent times been made in the knowledge of the causes and diagnosis of these diseases, cannot tell with effect on the bus. of an assu. co. for some time to come.

In the quinquennium ending 1855, out of a total of 423 deaths, there were 37 deaths from heart disease—being 8·33 p.c. of the total mort. "Notwithstanding the greater age of the Co., there has been no improvement in the survivancy of this class of the assured during the interval of 5 years—the average being exactly two-fifths of the average *expec.* of life at both periods." (Rep. p. 22.)

In the quinquennium ending 1860, out of a total mort. of 582, the deaths from diseases of the heart were 54—being 9·27 p.c. of the total mort.; or about the same as in the previous quinquennium.

In the quinquennium ending 1865, out of a total mort. of 877, there were 186 deaths attributed to "diseases of the circulation"—being 12·7 p.c. of the entire mort.; but the deaths from diseases of the heart were not shown in further detail.

In the quinquennium 1865-70, out of a total of 1190 deaths in connexion with the home bus. of the Co., no less than 152, or 15·6 p.c., arose from heart disease. In the previous quinquennial period they had only been at the rate of 9·5 p.c. of the total deaths. The able medical adviser of the Co., Sir Rob. Christison, says hereon:

There has long been an impression that diseases of the heart and blood-vessels have been becoming more frequent. But it must not be hastily assumed that the ratio now given confirms that suspicion. For, in the first place, the increased age of this Co. brings into the catalogue of deaths a larger

proportion of the assured who have attained the period of life at which diseases of the circulation are most apt to occur. And, secondly, medical certificates have almost ceased to present such vague causes as dropsy or asthma to account for death, and substitute the true organic diseases which are the occasion of the mere symptom dropsy or asthma, and of which organic diseases the most frequent is diseased heart.

American Experience.—The preliminary Rep. of the Mort. Experience of the *Mutual Life Ins. Co. of N.Y.* from 1843 to 1874, as prepared by its Medical Officers, Drs. G. S. Winston and E. J. Marsh, and pub. in 1875, detailing the causes of 5224 deaths occurring in the Asso. during that period, records 303 of these “as attributed to some form of heart disease,” and 17 others as due to thoracic aneurism. “The number of these has increased in frequency of late years, and prob. for the same reason mentioned in diseases of the brain [because more elderly persons are insured now than formerly]. In two-thirds of the cases ‘disease of the heart’ alone is stated, while in one-third the special form of disease is mentioned” (p. 13). Then (p. 45):

The mort. from heart disease increases directly with the years insured, from a per-centage of 3·18 in the first year to 8·88 in the period above 10 years of ins. The per-centage during the first year seems to be larger than ought to occur after a careful examination. Pneumonia occasions a large number of deaths at every period of ins., with the highest per-centage during the first year.

HEARTS OF OAK FRIENDLY SO.—See **FRIENDLY SOS.**, 1841. This So. has or had some very special features.

HEARTH MONEY [FUMAGE].—A tax upon the “Hearths and Homes” of the people, which has a somewhat remarkable history, and a very direct bearing upon the early estimates of pop. in this country, which we shall hereafter have to consider. The following chronological notes will supply authentic details:

1537.—At an assembly of the States-General of the *Netherlands*, at Brussels this year, it was proposed, as a means of raising the supplies for the troops in the next campaign, that instead of levies upon the separate states, there should be a levy in the way of a general impost of a Carolus guilder (22 pence $\frac{1}{2}$) upon every hearth or “hole from whence smoke issues.” This expedient was however unanimously rejected by the deputies from Holland, who declared that so far from being paid, it would inevitably cause a rebellion throughout the country—not from any objection to the tax *per se*, but because it would throw an undue share of the burthen upon Holland.—(Davies, *Holland*, i. 417.)

1600.—As a means of preparing for the prosecution of a war with Spain, the Council of State prevailed with the States-General to levy a duty of a guilder upon every hearth (*ibid.* ii. 361). Whether this impost was ever actually collected, or how long it remained in force, we have no means of ascertaining.

1662.—In *England* this tax was first levied in 1662, by 14 Charles II. c. 10—*An Act for Estab. an Additional Revenue upon His Majestie, His Heires and Successors, for the better Support of His and their Crown and Dignity*—which enacted “that from and after the five and twentieth day of March in the year of our Lord God 1662 every dwelling and other House and Edifice and all Lodgings and Chambers in the Inns of Court, Innes of Chancery, Colledges and other Sos, that are or hereafter shall be erected within the Kingdom of England, Dominion of Wales and Town of Berwick-upon-Tweed (other than such as in this Act are hereafter excepted and declared) shall be chargeable by this present Act be and are charged with the ann. payment to the King’s Majesty, His Heires and Successors for every Fire Hearth and Stove within every such House, Edifice, Chambers and Lodgings as aforesaid, the sum of Twoe shillings by the year, to be paid yearly and every year at the Feast of St. Michael the Archangell and the Feast of the Annunciation of the blessed Virgin St. Mary by even and equal porcons, the first payment thereof to be paid upon the Feast day of St. Michael the Archangell which shall be in the year of our Lord 1662.”

By sec. 2, owners and occupiers on notice were within 6 days to deliver to constables, etc., a true account of Hearths and Stoves. An account of the increase or decrease of Hearths and Stoves was to be taken and sent into the Exchequer (sec. 14). Poor persons not paying church or poor rates exempted from Hearth Tax, as also persons occupying houses under 20s. in ann. value, and not occupying lands of the ann. value of 20s. Also exemption in favour of blowing-houses, ovens, and hospitals, and almshouses, not of the true value of £100 by the year.

1663.—There was enacted 15 Car. II. c. 13—*An Additional Act for the Better Ordering and Collecting the Revenue arising by Hearth Money*—which recited that the revenue resulting from the preceding Act had been much obstructed for want of true accounts from occupiers of houses, etc. Further powers were therefore given to enforce the provisions of that measure: officers might enter houses, etc., in the day-time and check returns.

1664.—There was enacted 16 Car. II. c. 3—*An Act for Collecting the Duty arising by Hearth Money by Officers to be appointed by His Majestie*—which recites the provisions of the previous Acts, and further:

Nevertheless by reason of some defects in the said Acts and great negligence of the said officers and other persons in not returning the exact numbers of the said Fire Hearthes and Stoves, and not duly collecting, leavying and paying into H. M.’s Exchequer the full Revenue due for the numbers returned, at the times appointed, and by sundry fraudulent practises to elude the said Act, the said revenue is much diminished and not duly answered, For remedy whereof, etc.

It was enacted that the King might appoint officers to collect the revenue thereunder. The tax is said to have produced about £200,000 p.a.

1688.—There was enacted—consequent upon the Revolution of this year—1 Wm. & Mary, c. 10—*An Act for the taking away the Revenue arising by Hearth Money*—which recited :

Whereas H.M. having been informed that the Revenue of Hearth Money was Grievous to the People, was pleased by His Gracious Message sent to the Commons assembled in Parlyament to signifie his pleasure either to agree to a Regulation of it or to the taking it wholly away, as should be thought most convenient by the said Commons. And whereas upon mature Deliberation the Commons doe finde that the said Revenue cannot be soe Regulated but that it will occasion many difficulties and questions, and that it is in itself not only a great Oppression to the Poorer sort but a Badge of Slavery upon the whole People, Exposing every man's house to be entred into and searched at pleasure by persons unknowne to him, We your Majesties most dutifull and Loyall subjects the Commons, being filled with a most Humble and Gratefull sence of your majestyes unparallell'd Grace and Favour to Your People not onely for Restoreing their Rights and Liberties which have been invaded contrary to Law, but in desiring to make them Happy and at Ease by taking away such Burthens as by Law were fixed upon them, by which your Majestic will Erect a lasting monument of your Goodnesse in Every House in the Kingdom ; Doe most humbly beseech Your majestie that the said Revenue of Hearth Money may be wholly taken away and abolished.

Which was accordingly done, subject to collecting arrears due 30th Mar. 1689.

1698.—Dr. W. Davenant, in his *Discourses on the Public Revenues, and on the Trade of England*, etc. (p. 15), says :

There are few places which afford better Helps for Computation than England does at present. The Excise is a measure by which we may judge not only of what the people consume, but in some sort it lets us into a knowledge how their numbers increase or diminish. The Customs are the very pulse of the nation, from which its health or decays may be observed. *The Hearth Money has given us a view, certain enough, of the number of Families which is the very ground-work in such speculations ;* and these three Revenues must be the better Guide to computers because the Accompts of them are fairly kept and stated, and because the respective branches have been under so exact a management, that perhaps their utmost produce is known and understood.

This was the view of some other writers ; but it is clear that so far as the Hearth Money was concerned it never was a true guide upon which to build up the elaborate estimates of pop., etc., which were based upon it. The Acts above quoted demonstrate this. [HOUSES.] [POPULATION.]

1818.—Now, notwithstanding the failure of this Tax in England, there was enacted this year 58 Geo. III. c. 54—*An Act to grant certain Rates, Duties, and Taxes in Ireland in Respect of Fire Hearths, Windows, Male Servants, Horses, Carriages, and Dogs, in lieu of former Rates, Duties, etc.*, which, however, was four years later (1822) repealed as to this imposition by 3 Geo. IV. c. 54—*An Act to Repeal the Rates, Duties, and Taxes payable in respect of Fire Hearths and Windows in Ireland*, etc. The reason for repeal is not stated. [POPULATION.]

Note.—It is possible that there may be a higher antiquity in connexion with the origin of this impost than is yet known. In the Borough of Preston all the inhabitants originally had a vote—except those who lived in a room without a chimney. It is said that at an early date the Clergy levied a "Smoke Farthing" upon all who kept fires. Holders of property in the New Forest at a Pepper-corn Rent pay one penny a year for the right of cutting the Firewood required for home use. [SMOKE FARTHINGS.]

HEARTHSTONE, THE.—An illustrated paper for pol.-holders, pub. by Messrs. J. W. and C. M. Goodsell, of N.Y., 1871.

HEAT, ITS INFLUENCE UPON HEALTH AND LIFE.—In a popular sense heat is the opposite of cold. It was a maxim of some of the early writers upon health that heat is life, while cold is death, and there is something to be said in support of this view ; but the extreme of heat has dangers peculiarly its own. These will be referred to in detail under titles INDIA ; SEASONS ; TEMPERATURE ; TROPICAL CLIMATES ; etc. The influences of cold have already been reviewed under that title.

Dr. Nichols, M.D., in his *Human Physiology* (1872, p. 234), says :

Heat is the accompaniment of life. Some hold that heat is life. Plants and trees, while they live, are never so cold as the wintry air around them. All animals, even those called cold-blooded, resist in some degree changes of temperature. They are never so hot or so cold as the extremes of temperature to which they may be exposed. Man has prob. the maximum of this vital power of maintaining an independent temperature. A dead body freezes as soon as the mercury falls below the freezing-point, and roasts when exposed to a hot fire. A living body resists heat and frost. In the polar regions and the tropics the blood remains at the same temperature. Whatever the condition of the skin or the extremities may be, the blood in the centre of the system keeps very nearly in the same degree of warmth—about 98° Fahr. If there is any difference, it is warmer in winter than in summer, because respiration, circulation, and all vital processes are more active. Low animal organisms may be frozen to a certain degree and still retain life ; but in such cases there must be a centre and comparative warmth and vitality.

A man can remain in an oven while a beef-steak—flesh like his own flesh—is thoroughly cooked by his side. Many persons have endured an atmosphere heated to 400° or 500°. In the Turkish bath we can bear a temperature of 150° to 200°, not only without injury, but often with great comfort and advantage. I have taken my morning bath with the thermometer at 20° below zero, or in 52° of frost, where every drop of water that fell upon the floor turned instantly to ice, without the least inconvenience, and with less feeling of chill than in an ordinary English temperature. And when one is out in a temperature of 40° to 60° of frost, he finds a healthy exhilaration, and a pleasant glow in such an atmosphere.

The production and maintenance of heat in the body is a vital process for which chemistry does not fully account. The union of carbon and hydrogen with oxygen, always going on in the system, is

accompanied by the evolution of heat; but it cannot be shown that the heat developed in birds while hatching their eggs, or the external heat of fever, or that which is connected with the reproductive processes in certain plants, is the result of the destruction of tissue. The heat of inflammation has more resemblance to that of electricity than that produced by combustion.

The human body, like all masses of matter, is constantly sending off heat by radiation. Clothing hinders this in some degree, and so aids us to husband our heat. When warmly clothed, we waste less matter, and need less food to supply the waste. When the temperature rises above 70° Fahr., we need more than radiation. Then the action of the sweat-forming glands is increased, and the body is cooled by evaporation. It is this profuse perspiration, and the rapid taking up of the heat of the skin by the conversion of water into vapour, that enables men to live near furnaces, and even in hot ovens. But these sudoriferous glands act under the influence of the nerves, which are the inmost organs of life. When the living power of the nerves of organic life is exhausted—when life is spent—the temperature can no longer be maintained. The extremities become cold and numb; a clammy coldness overspreads the skin; the senses are dulled; the brain ceases to act; respiration becomes slow, slower, and stops; soon after the heart ceases to beat. The eyes lose their brightness, and assume a glassy stare; the whole body becomes rigid—the last action of vegetative, or mere bodily life; then comes relaxation, softening, and the free action of the chemical forces which life had left in check. The body putrefies; gases are evolved, disgusting and noxious compounds are formed; and the body, so full of life and beauty, becomes a nuisance and a horror which we are glad to bury out of our sight. The body returns to its elements, and after a time only dust and ashes remain—a little lime, magnesia, potash, soda. The carbon has united with the oxygen, to form carbonic acid; the nitrogen has passed off as ammonia, and the hydrogen has evaporated as water. A human body placed in an oven dries up to a weight of about 12 lbs.; add more heat, and it calcines into a few ounces. . . .

HEAT AND COLD.—Dr. Farr, in the Supp. to 35th Rep. of Reg.-Gen., wrote of "Heat and Cold" (p. lxii) as follows:

In the tempered climate of England a few men in summer die of sunstroke, and a few stray wanderers in winter nights are frozen to death; but the numbers of such deaths are inconsiderable. Upon the other hand, large numbers of both sexes and of all ages die of diseases induced by extreme heat or extreme cold: the heat diseases especially affecting the digestive, the cold diseases the respiratory, organs; the deaths by diarrhoea and bronchitis, prevalent types here, bearing constant relation to the higher and lower temperatures of summer and winter. Cold exhausts the sufferers from chronic disease. Clothing and firing are the natural protection against cold, which is most intense and most fatal in the night when the fire goes out. Much may be done by economy of fuel, now sent into the atmosphere in smoke. In India alcohol cannot be endured, and the soldier's head, instead of being cropped, requires the protection at least of his hair. The back of the neck, over which the hair should hang, is immediately over that key of life, the *medulla oblongata*, and the top of the spinal marrow. This in winter requires the protection of the hair against cold as much as the throat. The original reasons for cropping the soldier's or sailor's hair short should no longer exist.

Children suffer much from radiant sun heat, against which they should be protected. The fatality of cold follows this law—when the temperature falls below the freezing-point of water, the mort. at all ages rises above the average, and if the degrees be expressed by 1 in 1000 at the age of 20, it becomes 2 at the age of 29, 4 at 38, 8 at 47, 16 at 56, so doubling every 9 years. This must be taken into account by men and women as they advance in years; warmer clothing, fires, exercise, and more food are wanted in winter than in summer weather, in old than young blood.

The subject of temperature is of much interest in relation to the LIMITS OF RESIDENCE AND TRAVEL permitted by life offices; and the following facts will be of value in this connexion. In Thibet, which from its geographical situation might be supposed to be cool and temperate, the heat sometimes reaches the almost incredible degree of 150 in the shade; the nights are cold. In Senegal and in the West Indian Island of Guadeloupe, the summer temperature often reaches 130°. This is, perhaps, as high a temperature as any Europeans are habitually exposed to, both regions being commonly visited for commercial purposes, and the latter being largely inhabited by white men. In Persia the temperature rises to 125°, and appears to be the cause of most destructive epidemics. At Calcutta and throughout the delta of the Ganges the mercury rises to 120°, and a similar temperature is attained in Central America. In the jungles of Afghanistan, in the deserts of Africa, and along the Abyssinian coast, the *maximum* temperature is 110°—a temperature not absolutely fatal to the existence of white men, but almost completely destructive of all healthy activity. It is a curious circumstance that the same high temperature is reached in some of the inland valleys of California, though the average of the State is much lower than this. In Cape Colony, the African diamond diggings, and in parts of the territory of Utah, the midsummer heat is 105°. Next comes Greece, with 104°, and the deserts of Arabia, with 103°. Next to Arabia—extraordinary as it may appear—comes Montreal with a summer heat of 103°. The State of New York follows with 102°, but the other Northern States do not exceed 98°; Spain, Lower India, China, Jamaica, and the Southern States of the Union average 100°; Mauritius registers 96°, and Sierra Leone in Africa—so terribly fatal to Europeans—has not a higher summer temperature than 94°. For France, Denmark, and Belgium, at St. Petersburg (Russia), at Shanghai in China, in Burmah, the Sandwich Islands, Buenos Ayres, and Trinidad, the average is stated as 90°. In Nova Scotia and in the Azores the *maximum* is 87°. Great Britain, Siam, and Peru do not exceed 85°; while Portugal, Pekin in China, and Natal in South Africa have an extreme temperature of 80°. In Siberia the summer heat is as comparatively high as 77°, whereas in Western and Southern Australia, as in parts of Scotland, it is only 75°. In Italy, Venezuela, and Madeira, 73° is the *maximum*. In Prussia and New Zealand the thermometer rarely rises over 70°, and in Switzerland and Hungary not over 66°. In Bavaria, Sweden, Tasmania, and Moscow in Russia 65° is the *maximum*, while 55° is the summer heat of Patagonia and the Falkland Islands; and the midsummer heat of the greater portion of the Arctic regions is only 50°. In Southern

Iceland, lastly, the summer temperature is sometimes as high as 45° ; while Nova Zembla has an extreme midsummer heat of 34° —two degrees above the freezing-point of water.

In the year 1872 an extraordinary degree of heat prevailed over a large proportion of the earth's surface—Gt. Britain being an exception. In the United States 1876—the year of the Centennial Exhibition—was a very hot year, and the mort. from sunstroke was very considerable. This led to the compilation of a table of the hottest days in the Northern portions of the States during the past century; from which the following details are drawn. In 1776 (in Connecticut) 102° in the shade; 1792, July 2, 110° ; 1791, Aug. 4, 115° ; 1793, Aug. 12, 108° . From this date no very hot days are recorded down to 1830, when July 4, 107° ; in 1846, July 19, 110° ; in 1866, Aug. 4, 100° ; 1867, July 19, 109° ; 1868, July 7, 105° ; 1871, May 30, 98° ; 1872, July 4, 106° ; 1873, Aug. 9, 102° ; 1874, Aug. 19, 104° ; 1875, July 6, 105° ; 1876, July 9, 102° .

In the same table several cool years are noted, wherein the temperature did not rise above 100° —the hottest days of these years being: 1782, Aug. 11, 98° ; 1801, Aug. 4, 96° ; 1811, Aug. 17, 98° ; 1816, Aug. 19, 92° ; 1818, Aug. 25, 98° ; 1835, Aug. 19, 96° ; 1853, May 30, 99° ; 1855, Aug. 6, 98° ; 1871, May 30, 98° . The hottest recorded day is thus Aug. 4, 1791, when the mercury stood at 115° in the shade. The coldest summer was that of 1816, when the mercury rose only to 92° in the shade—a cool wet summer, with frost every month in the year in the Northern States. Thus in a century the highest point of the mercury has only occurred 3 times in May; July and Aug. being the usually hot months. The present year (1881) appears likely to bring May to the front again.

HEAT, DAMAGE TO GOODS AND PROPERTY INSURED BY.—The non-liability of *Fire* Ins. Offices for the results arising directly from heat spontaneously generated is generally made a condition of the contract [COMBUSTION, SPONTANEOUS]; but that exemption does not extend to adjoining property set on fire by means of the goods so spontaneously ignited. [FARMING STOCK INS.]

In *Marine* Ins. it is also a point of practice that the value of goods destroyed or damaged by their own proper vice, of which spontaneous heating is one of the most prevalent causes, cannot be recovered as against the underwriters; but for the damage done to the merchandize of other owners, as also for the vessel and freight, they are liable.

On the principle that insurers are answerable for direct and immediate, and not for consequential and remote, losses from the peril insured against, it was held by some of the early writers on Ins.—by Marshall particularly—that no damage occasioned by mere heat, however intense, was covered by a *Fire* pol.: there must be combustion, or actual ignition. This, if it were ever law, is not so now. The law in truth has to be settled in the light of cases which arise in practice.

The question has been already incidentally considered in some detail under EXPLOSIONS AS AFFECTING INS. OFFICES; and again under FIRE INS., RISK INSURED AGAINST. It will fall to be reviewed under PROPER VICE; and under SPONTANEOUS COMBUSTION.

HEAT REGULATOR, OR THERMOSTAT.—An ingenious apparatus for regulating the temperature of rooms, etc., the construction of which is founded upon the unequal dilation of different metals by the same degree of heat. The principle has been applied to the automatic action of *Fire Annihilators*. [FIRE ANNIHILATORS.]

HEATHFIELD, RICHARD.—Was one of the founders of the *Metropolitan Life* (1835), and held the post of "Superintendent" from the commencement of its bus. down to 1858. He had previously been connected with the *London Life*.

In 1853 he pub. a small volume of *Essays*, in which were contained some very sound remarks on *Life* Ins. He had written on many subjects, over a long series of years.

HEATING APPLIANCES.—It may be said broadly that all appliances for heating buildings, from the open fire-grate used in ordinary dwelling-houses, up to the most complex apparatus yet devised, are attended with certain dangers, from a fire ins. point of view; while the heating of buildings where manufacturing processes are carried on invariably requires the aid of practical and even technical knowledge, in order to bring it within the regulations of safety.

The appliances from time to time propounded for the purpose of warming have been very varied, including FLUES, GAS STOVES, HOT AIR FURNACES, HOT WATER PIPES, STEAM PIPES, and other mechanical contrivances which have passed out of immediate remembrance. We propose to take a rapid survey of the works relating to, and the criticisms passed upon each; as also of the legal requirements affecting the same.

1837.—Mr. Richardson pub.: *A Popular Treatise on the Warming and Ventilating of Buildings*, wherein he advocated the use of Perkins's apparatus, stating that the temperature of the tubes could be made to vary from 150° to 300° ; in rooms where great heat was desired, such as drying houses, etc., a temperature from 300° to 400° could be easily obtained. The power of the apparatus to raise this high degree of heat caused it to be regarded with suspicion by the surveyors to fire offices. The subsequent application of the "Heat Regulator" to this apparatus—in which Professor Babbage lent his scientific aid—it was believed overcame the danger at one time feared. This was explained by Mr. Perkins in his tract pub. in 1840: *A. M. Perkins's Imperial Patent Apparatus for the Warming and Ventilating Buildings*.

In 1837 also Mr. Charles Hood pub.: *Practical Treatise on Warming and Ventilation*, which has passed through many eds. See 1855.

1841.—There was pub. under date 10 Mar.: *Rep. on Perkins's System of Warming Buildings by Hot Water*. By John Davies, Lecturer on Chemistry in the Royal School of Medicine and Surgery, Consulting and Analytical Chemist, etc., and George Varden Ryder, Surveyor to the Manchester Assu. Co. This Rep. was addressed to the Directors of the Manchester Assu. Co., in conformity with a Resolution of the Board, directing a Committee "to inquire into the nature of the accidents which have recently occurred from the use of Hot Water Apparatus in Buildings, and to report thereon." The experiments showed not only that many fibrous and chemical substances are ignited, but that gunpowder was exploded from the heated pipes. Sheet-lead was melted; finally an explosion was intentionally produced—the results being quite similar to other explosions which had occurred without premeditation.

To this there was issued: *An Answer to Messrs. J. Davies and G. V. Ryder's Rep. on Perkins's System of Warming Buildings by Hot Water*, by A. M. Perkins, wherein he contended that in cases where disaster had occurred his directions had been disregarded.

1846.—Mr. Braidwood, in his evidence before a Select Committee of the House of Lords this year, stated that it was his belief that by long exposure to heat—not much exceeding that of boiling water, or 212° —timber is brought into such a condition that it will fire without the application of a light. The time during which this process of desiccation goes on, until it ends in spontaneous combustion, was, he thought, from 8 to 10 years—so that a fire might be hatching in a man's premises during the whole of his lease without making any sign, until the final outbreak.

1849.—Mr. Hosking, in his *Guide to the Proper Regulation of Buildings in Towns*, gives the following case: Day and Martin's well-known blacking manufactory in High Holborn was heated by means of hot water passing through iron tubes into various parts of the building. In Dec. 1848, the wooden casing and other woodwork about the upright mainpipes were found to be on fire, and from no other cause that could be discovered than the constant exposure for a long time of the wood to heat from the pipes. In this case the pipes were not in contact with the wooden casing, but they were stayed and kept upright by cross fillets of wood, which touched them, and these it was which appeared to have taken fire. The small circulating pipes which conveyed the hot water through the several chambers were raised from the floor to about the extent of their own diameter, and the floors showed no signs of fire where the pipes were so removed; but in every case where the prop or saddle which held the pipe up from the floor had been displaced, and the pipe had been allowed to sag and touch the floor, the boards were charred. It was understood that the temperature of the water in the pipes never much exceeded 300° .

Wood (he says) dried in the thorough manner mentioned is so liable to catch fire at the momentary propinquity to flame, that practical men imagine that there must be an atmosphere of some kind surrounding it of a highly inflammable nature. "In cases of pine wood (says a writer in the *Q. Review*, commenting hereon, vol. 96, p. 17) we could well understand such a theory, as we know that a stick thrust into the fire will emit from its free end a volatile spirit of turpentine, which lights like a jet of gas."

1855.—The Metropolitan Building Act of this year—18 & 19 Vict. c. 122—prescribes rules for placing hot air and hot water pipes at a certain distance from timber, viz.:

xxi.—The following rules shall be observed as to close fires and pipes for conveying heated vapour or water, that is to say:

1. The floor under any oven or stove used for the purpose of trade or manufacture, and the floor around the same for a space of 18 in., shall be formed of materials of an incombustible and non-conducting nature:
2. No pipe for conveying heated air, steam, or hot water, shall be fixed against any building on the face next to any street, alley, mews or public way:
3. No pipe for conveying heated air or steam shall be fixed nearer than 6 in. to any combustible materials:
4. No pipe conveying hot water shall be placed nearer than 3 in. to any combustible materials.
5. No pipe for conveying smoke or other products of combustion shall be fixed nearer than 9 in. to any combustible material.

And if any person fails in complying with the rules of this sec. he shall for each offence incur a penalty not exceeding £20, to be recovered before a justice of the peace.

1856.—Mr. Braidwood, in his paper *On Fires*, read before the So. of Arts, dwelt especially on the dangers arising from these:

In heating by hot water pipes, those hermetically sealed are by far the most dangerous, as the strength of the pipes to resist the pressure is the only limit to which the water, and of course the pipes, may be raised. In some cases a plug of metal which fuses at 400° is put into the pipes; but the heat to which the plug is exposed will depend very much on where it is placed: as however great may be the heat of the exit pipe, the return pipe is comparatively cool. But even where the pipes are left open the heat of the water at the furnace is not necessarily 212° . It is almost needless to say that 212° is the heat of boiling water, under the pressure of one atmosphere only; but if the pipes are carried 60 or 70 feet high, the water in the furnace must be under the pressure of nearer 3 atmospheres than one; and therefore the heat will be proportionately increased. Fires from pipes for heating by hot water have been known to take place within 24 hours after first heating; and some after 10 years of apparent safety.

He further said, there appeared to be "some chemical action between heated iron and

timber whereby fire is generated at a much lower temperature than is necessary to ignite timber under ordinary circumstances ;" and hence heating by hot-air, steam, or hot-water was objectionable.

Mr. Samuel Gale, in the discussion which followed, said an experience of more than 30 years taught him that Mr. Braidwood's views were not correct. As proof in some degree he produced a piece of wood cut that morning from a floor board, which had been in contact with a hot-water pipe in constant use for 18 years. "He had carefully examined one of the largest hot-water apparatuses in London, where the pressure was at least 40 lbs., and here he did not find any signs of chemical action, or charring of the wood near the pipes ; indeed the wood bearers upon which many of the pipes rested were as fresh and free from defect as when put in. He believed there was no means for producing artificial warmth so free from danger as low-pressure hot-water apparatus."

Mr. Marable, Surveyor to the Board of Works, considered that the real danger lay in the use of "high-pressure" hot-water apparatus. He dissented from the view of any chemical action between heated iron and wood. He believed the only action was "that the constant heat at last reduced the wood to a state resembling touchwood, which was ready to take fire on the slightest accident."

This year there was pub.: *Practical Remarks on Warming and Ventilating Plant Structures*. By Robert Hazard, Inventor of Hazard's Patent Heating Apparatus for ventilating Private and Public Buildings, Churches, Factories, etc.; producing a Mild and Genial Atmosphere, free from Mist. Also Hazard's Patent Heat Extractor, which can be applied to every Description of Boiler or Stove, extracting three-fourths of the Heat usually lost up the Chimney, and rendering it available.

1859.—Mr. C. Eddy read before the Social Science Asso. (Bradford meeting) a paper : *On the Method of Heating and Ventilating Large Buildings now Adopted in America* ; wherein he explained and earnestly recommended the adoption of the process of warming buildings by forcing warm air into them—warmed by passing the air over pipes heated with hot water.

1867.—Before the Select Parl. Committee on FIRE PROTECTION, which sat this year, the following contradictory evidence was taken :

Mr. Freeman, Surveyor to the Sun Fire for nearly a quarter of a century, had seen cases where the hot-water pipes for supplying a bath, being put behind the wood, "had completely charred the wood for the whole line of the pipe." He mentioned various fires which had arisen from this cause. He had himself placed gauze round a pipe, and in 20 minutes it was on fire ! The pipe was filled with water, but it would burn the skin off the hand, and would ignite touchwood. These were small pipes. He thought small pipes much more dangerous than large ones, "on account of the greater pressure required to obtain sufficient heat" (4886).

Mr. G. A. Young, Surveyor to the Imperial Fire, who had been 40 years a practical builder and surveyor, said he considered "generally speaking hot water perfectly safe" (356).

Mr. Charles Hood, whom we have mentioned under date 1837, giving some further facts of importance in one of his later publications—*Treatise on Warming Buildings by Hot Water Pipes*—says of Perkins's high-pressure apparatus :

... The temperature is found to vary, not only with the intensity of the heat of the furnace, but also with the proportion which the surface of the coil bears to the surface of the pipe which radiates the heat. In some apparatus, if that part of the pipe which is immediately above the furnace be filed bright, the iron will become of a straw colour, which proves the temperature to be about 450°. In other instances it will become purple, which shows the temperature to be about 530° ; while in some cases it will become of a full blue colour, which proves that the temperature is then 560°.

The pressure at this temperature is 1150 lbs. per square inch. He says the temperature varies as much as 200° to 300° in the several parts of the apparatus ; and that while pipes are proved up to the enormous pressure of 2800 lbs. p. square in., the working pressure is sometimes even greater than this !

1872.—In Shaw's *Fire Surveys*, pub this year, there are some very practical remarks (pp. 56-7) on the subject of heating buildings.

1876.—Mr. Sydney Jewsbury read before the Ins. Inst. (Manchester) a paper : *Heating Apparatus, having especial Reference to Pipe Stoves, Fireplaces, Hot-air Apparatus, Gas Stoves, Steampipes, and High and Low Pressure Hot Water*, wherein a large amount of information is given, but of too technical a character for popular quotation. A discussion followed, in which the attention of members was particularly called to the mode of heating cotton mills by high-pressure steam in small bore pipes, which were being generally introduced, and the danger of fire under certain circumstances which might attach thereto. It was also urged that stove pipes having elbow or horizontal piping were eminently more dangerous than pipes arranged vertically, in consequence of the greater liability of the former to lead to an accumulation of soot. Perkins's hot-water apparatus was also dealt with at considerable length. See 1878.

In the *Review* of this year (vol. vii. p. 247) will be found an excellent art. on *The High Pressure Hot Water Heating Apparatus*, wherein many of the resulting dangers are reviewed, and instances given.

1878.—Mr. Geo. V. Ryder read before the Ins. Institute (Manchester) a paper : *High Pressure Hot Water Heating Apparatus* ; wherein some of the points raised in

Mr. Jewsbury's paper already noticed were discussed and refuted; and generally Mr. Ryder defended his Rep. of 1841 already quoted. [FIRES, CAUSES OF.] [FLUES.] [IRON, OXIDE OF.] [STEAM-PIPES.] [STOVES.]

HEATING CITIES AND TOWNS.—The latest development in the way of heating dwellings and other buildings is not that of dealing with individual cases (as in the preceding art.), but of laying on heated air to whole towns and cities.

A partial adoption of this plan was suggested at the Congress on Hygiene held at Brussels in 1852, and followed up in practice by M. Leon Duvoy, who contracted to warm and ventilate the church of the Madeline, having 60,000 cubic metres of space, by night as well as day, for 14 francs per diem; and to keep the hospital La Ribosière warmed up to 62° by night as well as by day and to change the air every hour. [CONTRACTS FOR REDUCING SICKNESS AND MORT.]

But it was left for the United States to apply the system to entire towns and villages. The plan has been in operation for several years, on what is known as the "Holly system"—this system however being only a mode of accelerating the passage of the heated air or steam through the pipes.

1877.—The first experiment upon a town was made during this year at Lockport, near Niagara—a town a little north of 43 degrees of north latitude, and considered to be a cold region. The following are the chief details: In June half a mile of pipes underground was laid, which enabled the Co. to learn the exact capacity of the pipes to carry steam, as well as the exact rate of loss by condensation. Then three miles of pipes were laid, there being one continuous length of a mile and a third. Very little of the piping was larger than four inches diameter. The Co. during the winter and following summer heated about 40 dwellings, a large school-house (105,000 cubic feet), and the largest hall in the town, besides furnishing steam to run two engines, one of them about half a mile distant from the boiler-house, and were supplying steam for a number of other purposes. Houses a mile away are heated as readily as those near the source of heat. They have three boilers—two horizontal, five feet by sixteen, and one upright. Most of the time one boiler is sufficient, and it is only during the severest cold that they run two. Two firemen do all the work—one day, one night. The same force can run 400 houses as well as 40. They believe that, with sufficient boiler capacity and pipes of proper size, an area of at least four miles square can be heated from one set of boilers. In large cities they reckon ten boilers will suffice. The Holly is "a system of high pressure in the mains and low pressure in the service pipes," and thus, it is represented, "much smaller and less expensive mains and pipes are attached than those necessary in the usual exclusively low-pressure system of steam-heating." Low pressure is sufficient for single buildings, but not for cities. The Holly mains decrease from eight inches to one inch, as they divide and sub-divide. The pipes are covered and bound with non-conducting materials, which are important features of the discovery. The mains are inserted in logs of wood bored for the purpose, and sunk in trenches laid with tiles, three to five feet deep, running above the gas and water pipes. Expansion junction-boxes are used to prevent the ill effects of expansion in the iron—that is, to compensate for the expansion. These are put at intervals of from 100 ft. to 200 ft. along the lines.

1878.—Application was made for a concession to apply the system to a part of the city of New York, when the following facts were elicited. It cost the city \$600,000 a year to warm the public buildings, such as Court-houses, school-houses, police-stations, hospitals, &c.; by steam it could be accomplished at two-thirds of the cost. It cost the city \$225,000 to cart away the ashes, etc., from the residences; a great deal of this would be saved from there being no ashes; but other refuse would still require removing. It cost the City many thousands of dollars to melt the snow from the side walks, etc. By means of steam jets it could be accomplished speedily and at small cost. The rates of Ins. would be reduced, by reason of the lessened danger of fires by abolishing stoves, flues, etc. The Mayor was favourable to granting the concession; but the coal and some other interests, including Ins. agents! seemed to object.

In addition to the municipal advantages already enumerated as arising in the case of New York, there are many mercantile and domestic advantages likely to accrue from the system. Manufacturers could have the steam laid on, for the working their machinery, and hence avoid the cost and risk of running their own boilers; laundries, bathing establishments, greenhouses and conservatories can have the heat supplied to the extent required. Water can be heated for all purposes; and cooking effectively accomplished. The cost for attention to fires and furnaces, and for cleansing stoves and pipes, is spared. In the case of fire, too, a most effective annihilator is at hand, in the shape of steam. And as regards coal smoke, believed to be so detrimental to health—certainly to all who suffer from affections of the respiratory organs—the nuisance would be almost entirely abated.

The whole of the appliances for furnishing heat in the building are said to be of the most simple construction, and such as can be managed by even the most inexperienced persons. The pressure admitted to each house can be controlled, and may vary from 2 lbs. up to 200 lbs. if needed. It is measured by metre.

In London (Canada West) the system has now been successfully working during two winters.

1881.—We are glad to see that steps are being taken in England to perfect an apparatus for supplying dwelling-houses with heated air (Weeks & Co.)—the rest may follow.

HEATON, W. B.—Associated with the Newcastle branch of the *Royal* since 1874. He had previously been for 8 years in the head office of the Co., and on leaving for his present position received a handsome testimonial from the members of the staff.

HEAVE THE LEAD.—To take soundings with the hand lead line.

HEAVE THE LOG.—The process of determining the ship's velocity by the log line, and appliances attached.

HEAVE OF THE SEA.—The power that the swell of the sea exerts upon a ship in driving her out of, or faster on in her course, and for which allowance must be made in the day's running. It is a similar, or the same action in force as in a head sea.

HEAVING AND SETTING.—Applied to a ship said to be "riding hard"; pitching and tending.

HEAVY LABOUR.—For the effects of this upon Health and Longevity, see *FRIENDLY SOS., MORT. AND SICKNESS EXPERIENCE OF, 1853.* [HEART, DISEASES OF THE.] [OCCUPATIONS.]

HEBELER, BERNARD.—Consul-Gen. for Prussia, contributed to the Statis. So. of London in 1839, a paper: *Changes in the Population of the Prussian States, during the Year 1838.* [PRUSSIA.]

HEBERDEN, DR. WM., "the Elder."—A physician of considerable eminence in London during the last century. He took a prominent part in preparing the materials for that important work: *A Collection of the Yearly Bills of Mort. from 1657 to 1758 inclusive, together with several other Bills of an earlier Date, etc.*, pub. in 1759, and which contains also a selection from the works of Graunt, Petty, and Corbyn Morris.

It appears that Dr. Heberden collected the materials, while Dr. Birch saw the work through the press; hence it is sometimes called "Dr. Birch's Collection." Mr. James Postlethwayt, F.R.S., contributed the chap. "A comparative view of the diseases and ages, and a T. of the Prob. of Life for the last 30 years."

HEBERDEN, WILLIAM, the Younger, M.D., F.R.S., son of the above.—Pub. in 1801: *Observations on the Increase and Decrease of Different Diseases, and particularly of the Plague*; containing some Tables chiefly deduced from the London Bills of Mort. The author announced his intention of pub. a new ed. of the Bills of Mort., but this he does not appear to have accomplished. Papers from him on the Mort. of Lond. will be found in *Phil. Trans.* for 1796; and in vol. iv. of the *Trans. of the Royal College of Physicians*. From his investigation of the B. of Mort. he deduced an important law—the *Influence of Cold upon Health.* [BILLS OF MORT.] [BIRTHS.] [COLD.] [DISEASES.] [HEAT.] [MORT. OBS.] [PLAGUE.]

HECKER, JUSTUS CARL.—A German physician, pub. in German in 1832: *The Black Death in the 14th Century*; and in the same year: *The Dancing Mania*. The former was trans. into English in 1833. The latter was trans. by Dr. Babington into English, and pub. in London in 1835. [BLACK DEATH.] [PLAGUE.]

HECKLE.—An instrument used in separating the fibres of flax, and placing them in parallel tresses. Its position in a flax spinning mill has an important bearing upon the Fire Risk.

HECKSCHER, HERR.—Of St. Petersburg and Berlin [Heckscher & Gottlieb, *Vienna*; Heckscher & Pearson, *London*], Fire Ins. Agent, representing various British and Continental Fire Offices. He and his firm have negotiated various large re-insurance contracts in Fire Ins., with varying financial success to the offices concerned.

HECLA FIRE INS. CO., LIM.—Founded 1875, with an authorized cap. of £100,000, in 50,000 shares of £2, "estab. for the purpose of giving increased facilities for ins. of every description of property; and for making provision against casualties arising from causes at present generally recognized as entitled to the benefits of ins." The prosp. further said:

The necessity for this Co. is proved by the numerous calamities which have occurred within the last few years, more particularly the most recent and serious—the explosion on the Regent's Canal, which has caused an enormous destruction of property hitherto unprotected by ins.

The present rates for Fire Ins. on warehouses, factories, mills (especially cotton, woollen, flax, jute, rice, corn, and flour mills), are fixed upon a hard and fast line, and press unequally on that class of property. This Co. proposes to remedy this; by an equitable adjustment of rates, by taking each risk on its own merits, and by allowing a reduction in premiums for the adoption of appliances for the prevention and extinction of fires.

It is proposed to give the insured an opportunity of participating in the profits resulting from their own contributions, by allowing a return, by way of bonus, of £5 p.c. on renewal premiums in all cases in which no claim has been made against the Office during the previous year; an advantage offered by no other Proprietary Co.

A great obstacle hitherto experienced by non-tariff offices has been the difficulty of re-assuring or underwriting their surplus risks. This difficulty is, in the case of this Co., overcome by arrangements entered into with other Cos., so that larger risks can be accepted with profitable advantage.

The *Hecla* Fire Ins. Co. will include in its operations the making good of damage caused: 1. By fire and explosions; 2. It will issue pol. covering fire and explosion; 3. Or pol. for explosions only; 4. Or ordinary fire pol.

And it will issue pol. to Underwriters and Marine Ins. Cos., covering so much of the risk, or any part thereof, as is involved in the liability to loss by fire under their Marine pol., and also to take this risk from merchants, brokers, and others.

Arrangements are being made with some of the leading Continental Ins. Cos., for the benefit of the Co., by which a large annual premium income will be secured.

This Co.—which was promoted by Mr. T. B. Goldsmith—we believe did not secure sufficient cap. to give it a solid foundation. It carried on bus. for a few months, and then an attempt was made to found the Co. next to be noticed.

Mr. S. Cobbett was first announced as Sec., succeeded by Mr. W. L. Lang.

HECLA MUTUAL FIRE INS. CORP., “Guaranteed,” unlimited and without cap.—Founded 1876, for the purpose of carrying on the bus. of Fire Ins., and for accepting from Underwriters and Marine Ins. Cos. so much of their risks, or part thereof, as is involved in the liability for loss by fire under their pol.

The peculiar feature of this Asso. was “to accumulate and capitalize funds, whether arising from contributions and payments to be made by the members or otherwise; and to make such funds available for meeting the losses resulting from the ins. undertaken, and in defraying the expenses incurred for carrying on the bus.; and when the same shall not be required for such purposes, to distribute and divide same amongst the members.”

The founder of the Asso. was Mr. T. B. Goldsmith; and out of its estab. arose, in 1879, the case of *Brice v. Goldsmith* in the Common Pleas, when the following facts were disclosed: The plt. is a civil engineer, and the deft. was formerly the manager of the *Hecla* Mutual Fire Ins. Corp., “Guaranteed.” In Aug. 1876, the plaintiff read the following advertisement in *The Times*: “A gentleman accustomed to correspondence (prepared to advance £500 at once) can secure a permanent and valuable appointment. If able to correspond in French and German would be an advantage. Address, Alpha, care of Davies & Co., Advertising Agents, Finch Lane, Cornhill.” After correspondence with the defendant and an interview, at which the defendant represented that he was manager of the above-named Co., which had been duly regis. and was doing certain good bus., the plt. was engaged as Sec. to the Co. at a salary of £500 a year. He also paid £500 at once, and took a promissory note from two of the directors of the Co. He subsequently discovered that most of the material representations made by the deft. were absolutely false, and immediately left the Co.’s office, and brought the present action. The deft. did not give evidence himself or call any witnesses. The jury found a verdict for the plt. for £562 10s.

This we believe is the last heard of this enterprise.

HECTARE.—The unit employed in French land or surface measure. It is equivalent to 2·471143 (nearly 2½) English acres; or expressed in other terms, an English acre represents 404671 (rather more than 4-10ths) of a French Hectare. In several T. in this work we give the Hectare as a measure of comparison.

HECTIC (from the Greek, *habiti* or *habitual*).—This term is sometimes used to denote an habitual or very protracted fever; but more generally to designate a remittent fever marked by daily paroxysms.

HECTIC FEVER.—A constitutional fever attended by debility, a small quick pulse, paleness, loss of appetite, excessive perspiration and emaciation. It generally affects more or less of an intermittent character; but the exacerbations and remissions are irregular, and the sweating stage is not followed by that relief which it usually announces in other febrile attacks. It is often symptomatic of some particular disease, and requires to be regarded accordingly by the medical examiner for Life Ins.

HECTOR, ALEXANDER.—Actuary and Accountant, Edin. He was consulted by the promoters of the *Scottish Provident* regarding their scheme, in its early form (1831); and was also consulted by various promoters of F. Sos. and other Provident Inst.

HEEL.—The after end of a ship’s keel, and the lower end of the stern-port to which it is connected. *To heel*. To lie over, or to incline to either side out of the perpendicular: usually applied to a ship when canted by the wind, or by being unequally ballasted.

HEEMSKIRK, HERR J. — Was about 1850 a member of the Second Chamber of the States General of Holland, and entitled himself to the thanks of the Ins. profession for the aid he rendered to Mr. F. Hendriks in the verification of certain facts regarding De Wit’s scheme of Life Annu. in Holland. [ANNU. ON LIVES, 1671.]

HEGIRA.—In Chronology, the era used by the Mohammedans in the computation of time. The epoch or first day of this celebrated era, so extensively employed in the East, corresponds to Friday, July 16, in the year 622 of the Christian era. The indication of this chronology is A.H., and great care has to be employed to avoid confusion and render the events of Mohammedan time in harmony with our own in narrating historical events, or compiling chronological T. As the years of the Hegira consist of only 354 days, it is found by subtracting 622 from our dates, then multiplying by 365·52, and dividing by 354.

HEIGHAM, C.—Was Secretary of *Licensed Victuallers and Gen. Plate-Glass Ins. Co.* down to the date of its passing into liquidation.

HEIGHT OF BUILDINGS.—Several important considerations attach to the height of Buildings. As affecting health, high buildings often prevent the free passage of air, as also the diffusion of light, and so produce injurious results. Where occupied as flats, or tenement dwellings, they greatly increase the density of the pop.; although the health of those who live in the upper portions is prob. improved. In the case of fire the danger is threefold: (1) lives exposed to risk on the upper floors cannot be rescued with facility if at all;

(2) the ordinary fire extinguishment appliances are inadequate to such cases; (3) the falling walls may be a cause of wide-spread danger. On the other hand, such buildings are frequently much better constructed than those of low elevation.

1698.—Maitland, in his *Hist. of Edinburgh*, states, under this date: The parl. taking into consideration the great danger the *Edinburghers* were exposed to by the excessive height of their houses, both in respect to *Fire* and *Falling*; they enacted, That no building to be erected in the City thereafter should exceed 5 storeys in height; the front wall in the ground storey to be 3 ft. in thickness; the second 2 ft. 9 in.; the third 2 ft. 6 in.; the fourth 2 ft. 3 in., and the fifth 2 ft.

1872.—Capt. Shaw, in his *Fire Surveys* (p. 9), says:

The height of a building is a matter of extreme importance also in two ways, which . . . will be considered separately; the one with regard to itself alone, the other as forming one of the elements of the cubical capacity. Viewed with regard to itself, it may be laid down that the safety of a building is indirectly as its height; that is to say, that if a building with a capacity of 216,000 cubic feet were erected on an area of 147×147 ft. to a height of 10 ft., its highest point could be reached without any difficulty; whereas if erected on an area of 45×47 to a height of 100 ft., its highest point would be exceedingly difficult of access; or to take an extreme case, if erected on a site of 31×32 ft. to a height of 216 ft., its highest point would be practically quite inaccessible to any of the appliances in ordinary use.

Persons who erect high buildings should invariably make their own arrangements for getting down externally to spots within reach of the ladders or other means of escape available from outside. For safety of life it is advisable that all high buildings should be provided with external ladders of wrought iron or some other material likely to be able to resist the effects of a fire at its commencement, and extending to within 40 ft. of the ground—that being the greatest height at which assistance from without can be promptly rendered.

1874.—In the Fire Office Tariffs it has been customary to charge an extra prem. if the building should be more than a certain height. To avoid doubt as to the mode of computing the height, the following resolution was come to by the tariff committee. In computing the number of storeys of a building, rated under any tariff, producing an add. charge for extra height, the following rule is to be observed: To reckon every storey or floor, whether extending over the whole or only over a part of the area on which the building stands, the ceiling of which is more than 3 ft. above the lowest point of the land-level or ground-line of the site upon which the building stands. It applies to the following tariffs:—Corn and rice mills (England); Hosiery warehouses and hosiery factories; Nottingham lace warehouses and lace factories; Corn and rice mills (Ireland); Cotton mills (England and Ireland); Flax and jute mills (England); Flax and jute mills (Ireland); Woollen, etc., mills (England and Scotland); Corn and rice mills (Scotland); Corn mills (Scotland).

1875.—By the new Building Law of *Sweden*, which came into force with this year, no new building is to exceed in height the width of the street in which it stands, with 5 ft. added; and no dwelling-house is to be higher than 5 stories, the attics if fitted with fire-places, or to be used for dwelling purposes, being counted in. Many other wise regulations are enforced. [SWEDEN.]

A similar regulation is much needed in some of the cities in the U.S.

HEIGHT AND WEIGHT.—See HUMAN BODY, PROPORTIONS OF.

HEINECCIUS, HERR J. G.—Published at Magdeburg in 1740: *Scriptorium de Jure Nautico et Maritimo Fasciculus*. The work consisted of a reprint, with a preface, of the works of Loccenius, Stypman, and Kuricke, which had become rare, especially the first named. While however the works of Stypman and Kuricke were reprinted without alteration, sundry changes as well of retrenchment as add. were made in that of Loccenius, so that the Stockholm ed. of 1652 is the only one of authority. See Valin, preface.

He was also the author of various other works bearing upon Commerce and International Law.

HEIR.—One who succeeds by descent to any lands, tenements, and hereditaments,—estate of inheritance, as distinguished from chattels, leaseholds, money, etc., which constitute personal effects only. The term is *nomen collectivum*, extending to all heirs; and hence to heirs of heirs *in infinitum*. But there are sub-distinctions and qualifications important to be kept in mind, especially by the actuary, who is constantly called upon to value the possible pecuniary interests of heirs, however remote. These are:

Heir Apparent. He whose right of inheritance is indefeasible provided he outlive the ancestor: as the eldest son, who must by the course of the common law be heir to his father on his death.

Heir Presumptive.—He who if the ancestor should die immediately would be his heir, but whose right of inheritance may be defeated by the contingency of some nearer heir being born; as a brother or nephew whose presumptive succession may be destroyed by the birth of a child; or a daughter whose present hopes may be hereafter cut off by the birth of a son.

Heir General, or Heir-at-law.—He who after his father or ancestor's death has a right to inherit all his lands, tenements, and hereditaments.

Heir of Entail.—The heirs of the particular person to whom an estate of inheritance is descendable, in contradistinction to an heir general. See ESTATE TAIL.

Heir Special.—An heir who is not heir at Common Law, *e.g.* heir by the custom of gavelkind, borough-English, or heir in tail.

Heir by Custom.—He who is heir by a particular and local custom, as in borough-English lands the youngest son succeeds his father; while in Gavelkind all the sons inherit as parceners, and make but one heir.

Heir by devise, or hares factus.—He who is made by will the testator's heir or devisee, and has no other right or interest than the will gives him.

Hares sanguinis et hereditatis (heir of the blood and inheritance). A son who may be defeated of his inheritance by his father's displeasure.

Ultimus hares.—He to whom lands come by escheat or forfeiture, for want of proper heirs, or on account of treason or felony. He is either lord of the manor, or the crown.

Scotch Law.—Under the *Scotch* law, heir has a more extended significance, comprehending not only those who succeed to lands, but successors to personal property also. It distributes heirs into the following classes:

Heir of Line.—He who succeeds lineally, by right of blood.

Heir Male.—The nearest heir male who can succeed.

Heir Active.—He who is served heir, and has the right of action.

Heir Passive.—He whom the law makes liable to be heir.

Heir by conquest.—He who succeeds to the deceased in lands and other heritable rights, to which the deceased did not himself succeed as heir to his predecessors; as where a father leaves an estate purchased to his second son.

Heir of tailzie [Heir of Entail].—He on whom an estate is entailed.

Heirs portioners.—When women succeed they have all equal portions.

Heirs of provision, or heirs by distinction.—Those who succeed by virtue of a particular provision in a deed or instrument.

Heir whatsoever.—An heir-at-law.

HEIR, INTEREST OF IN FIRE POLICY.—When a person insured by a Fire pol. under which a claim has arisen dies before the payment of such claim, the right to sue vests in his personal representatives, and the ins. money will form part of his personal estate—unless, in the case of ins. upon buildings, the heir or devisee can intercept it by requiring that it shall be expended in the reinstatement of the premises, under the provisions of the Building Act of 1774. [FIRE INS. LOSSES, PAYMENT OF.]

An heir can never as such be interested in a Life Pol.—the proceeds pass to the personal representatives.

HEIRDOM.—Succession of inheritance.

HEIRESS.—A female heir. Where there are several, they are called *co-heiresses*.

HEIRLOOMS.—In Law, such goods and personal chattels as go to the heir along with the realty. The quality of heirlooms is fixed by custom; but the term is commonly applied to pictures, plate, etc., settled so as to go along with the title or estate. The law regarding these is exceedingly complicated. They constantly become the subjects of Fire Ins.

HEIRS OF ENTAIL.—Already explained in definition of HEIR under the Scotch law. In 1849 Mr. W. T. Thomson pub. : *Notes on the Pecuniary Interests of Heirs of Entail, with Calculations regarding such Interests in reference to the Acts of Parl. affecting Entails, and T. showing the Values of Life-rent Interests*. This work, which has now become rare, was of peculiar value at the date of its pub. by reason of the alterations then recently made in the law of entail in Scotland. After showing under what conditions heirs in possession may disentail—first, where the consent of no other heir is required; and secondly where the consent of one is necessary—the author proceeds to discuss the relative pecuniary interests of heirs in possession and reversion, and explains his method of determining such interests; giving supposititious cases by way of illustration, and adverting to the various incumbrances with which landed estates are commonly saddled. Some nice questions as to the conflicting rights of parties under peculiar circumstances are set forth.

It was in reviewing this work that the editors of the *Assu. Mag.* remarked (p. 103*):

It has often occurred to us that if the knowledge of the lawyer and the actuary could be combined in one individual, that which appertained to each would be rendered much more complete and serviceable. For want of the information of the actuary the lawyer is often led into erroneous conclusions, and it may be that the reverse takes place not unfrequently.

In 1880 the case of *M'Donald v. M'Donald* came before the House of Lords on appeal. The questions arose on a petition for disentail by General M'Donald, the respondent. In valuing the "expectancy or interest" of the second and third substitute heirs of entail (the appellants) in an entailed estate, under s. 5 of the Entail Amendment (Scotland) Act, 1875, the Court of Session, on the 18th of March, 1879, held (1) that an averment that the first substitute heir, who had consented to the disentail, but refused to be medically examined, "was in good health, but had suffered from ailments which would tend to shorten his life," was not relevant to induce the Court to order an inquiry which was asked into the actual state of health of the first heir, but that his life must be taken as an average one, and be estimated according to proper life tables, according to his actual age; (2) that the chance of the second and third heirs respectively acquiring the fee by surviving all the other heirs of entail was not an element of value that ought to be considered.

On appeal, the Lords dissented from the decision of the Court below on both the above points, holding (1) that the second and third heirs had a right under the Entail

Amendment (Scotland) Act, 1875, s. 5, to bring before the Court any facts relevant to the probable duration of the first heir's life; and his state of health, and the ailments from which he had suffered, if calculated to shorten life, must be relevant to such an issue; and (2) that the chance of succeeding to the fee simple must be taken into account. Cause remitted to the Court of Session with a declaration, and the respondent ordered to pay the costs of the appeal.

HEIRSHIP MOVEABLES (*Scotch Law*).—Those things which the law withholds from the executors and next-of-kin, and gives to the heir that he may not succeed to a house and lands comparatively dismantled. They consist of the best of everything: furniture, horses, cows, oxen, farming utensils, etc.; but do not include fungibles—such as wine, corn, or money.

HELD IN STORE.—The law and practice as to the liability of Fire Ins. Offices for goods and merchandize held by wharfingers and others, has been expounded in some detail under title **GOODS HELD IN TRUST AND ON COMMISSION**. Reference to the case of *Strohn v. Hartford Fire Ins. Co.* was there omitted. It was here held by the Supreme Court of Wisconsin (1) that goods "held in store" ought to be construed to embrace the property of others kept in the warehouse at the time of the fire; (2) that the words "held in store" are of sufficiently ambiguous or doubtful import to let in extrinsic evidence of their meaning, and what the parties intended by them; and that this will apply in ascertaining what would have been the language of the pol. had it been written; (3) that the warehouseman had a right to maintain an action for the amount of the ins. on behalf of the parties interested. (3 Ins. Law Jour. 188.)

HELD IN TRUST.—See **GOODS HELD IN TRUST**.

HELDER, STEWART, F.I.A.—Act. of the *Clergy Mut.* since 1867; and under his financial guidance the So. has maintained its high character. He was trained to the bus. in the *Mutual Life*.

HELMES, WILLIAM, of Change Alley.—A name that will be handed down to posterity as the projector of a scheme for the Ins. of Female Chastity—this during the period of the South Sea mania 1719–20. [FEMALE CHASTITY, INS. OF.]

HELPS, JOHN.—Was Sec. of *Westminster So. (Life)* for nearly 40 years, down to its amalg. with the *Guardian* in 1863. He was also for many years Sec. of *British Fire*, which was worked in association with the first-named inst.

HEMIPLEGIA [formerly hemiplexia].—From the Greek, *half*, and a *stroke*; signifying a stroke on one side, or one-half. A variety of paralysis in which one side—half of the body—is deprived of sensation, or of motion, or of both.

HEMORRHAGE [Hæmorrhage].—From the Greek, a compound word signifying blood and to break or burst—hence any discharge of blood from the blood-vessels; a flux of blood. When from the lungs, it is regarded as the too sure indication of the prevalence of phthisis.

HEMORRHOIDS.—Veins liable to discharge blood, especially the piles. Livid and painful tubercles around the margin of or within the anus, from which blood or mucus is occasionally discharged. Mann, in his *Medical Statistics of Life Assu.* (1865, p. 122), says:

Hemorrhoids, when attended with frequent recurring losses of blood, even if the Hemorrhages be small in quantity, become a source of considerable risk upon their cessation: apparently by the diversion of the blood to more important parts. Hence it is not unusual to find the sudden cessation of these periodical discharges followed by paralysis or apoplexy.

Inquiry (he says) should be made by the examiner as to the cause of the distention of veins of the rectum—whether it arise from obstruction in the liver, in the valves of the large vessels near the heart, or in hypertrophy of the heart itself.

HEMOPTYSIS.—See **HÆMOPTYSIS**.

HENDERSON, BENJAMIN.—Was Sec. in London of *Liverpool and London* from 1847 to 1859.

HENDERSON, J. SCOT.—One of the editors of the *Bullionist*, and understood to be the writer of the late series of art. on Life Ins. Cos. which appeared in that Journal, and which have since been separately pub. under title of *Life Assurer's Handbook*.

HENDERSON, ROBERT FAULDS.—Was Man. of *National Funds Assu. Co.* in 1872. He was trained to the bus. of banking, and commenced his ins. career as agent for *City of Glasgow Life* in Edin., remaining in that position down to 1867, when he became Supt. of Agents for the *Reliance*; afterwards was Sec. in Edin. for *Brit. Imperial*, and later, resident Sec. in Lond. for the same Co. In 1872 he became Sec. of the *Positive*. We believe he has now retired from ins. pursuits.

HENDRIKS, AUGUSTUS.—Actuary of the *Liverpool, London and Globe*, since the amalg. of 1863. He had been for some years previously (since 1852) Assistant Actuary of the *Globe*, under his talented brother, the then Chief Actuary. From the able administration of Mr. Hendriks the financial strength of the Life Depart. of the Co. becomes increasingly apparent.

HENDRIKS, FREDERICK.—Actuary and Sec. of *Universal Life* since 1864; also Consulting Actuary of *Equitable Reversionary* since 1862. He was Actuary of the *Globe* from 1849 down to its amalg. in 1863.

To Mr. Hendriks the Ins. profession is under deep obligation: for it was he who made it clear (in the early pages of the *Assu. Mag.*) that the history of Ins. enterprise in

this country is closely identified with important epochs in our commercial hist. He did more : he commenced to unravel the somewhat tangled skein of that hist. : and he threw the charm of his scholarship over all that he did in this direction. It is little short of a misfortune that his time and health did not allow him to pursue these labours. The sagacious steps which he took towards elucidating the labours of the Grand Pensionary John De Wit [in Holland] in the adaptation of Life Annu. to the requirements of National Finance, and the result of those steps, already have been referred to under ANNUITIES ON LIVES, date 1671 ; also DE WIT, JOHN.

We now proceed to notice the various writings of Mr. Hendriks on Ins. and cognate subjects :

1851.—*Contributions to the History of Ins. and of the Theory of Life Contingencies, with a Restoration of the Grand Pensionary De Wit's Treatise on Life Annu.*, pub. in 8vo. vol. pp. 66.

The following papers have been contributed to the *Assu. Mag.*:

1851.—*Memoir of the Early History of Auxiliary T. for the Computation of Life Contingencies* [vol. i. p. 1].

„ *Supplementary Remarks on "Auxiliary T. for Life Contingencies," including Notice of a recent T. by W. T. Thomson, F.R.S.E.* [i. 12*].

„ *Essay on the "Growth of the City of London," by Sir W. Petty* [i. 235].

1852-3.—*Contributions to the History of Ins. and of the Theory of Life Contingencies, with a Restoration of the Grand Pensionary De Wit's Treatise on Life Annu.* [ii. 121].

1854.—*First Parl. Committee on Ins.*, 1720, with *Remarks Illustrative of other Facts connected with the History of Ins.* [iv. 58, 300].

„ *A Review of some Recommendations of the Select Committee of the Ho. of Commons on Assu. Asso.* 1853 [iv. 325].

1856-8.—*Discovery of De Wit's Treatise on Life Annuities* [vi. 137].

1856.—*Examination of Ulphian's Tables* [vi. 313, 314*].

1857.—*Remarks on Collections for Relief of Sufferers from Fire* [vii. 260].

„ *The Case Book of John Rowe of London and Exeter from 1775-90. Edited from the original MS., with an Introductory Notice* [vii. 136].

1858.—*John De Wit ; or, Twenty Years Interregnum in the Stadtholdership of the Seventeenth Century*, by M. Esquiron de Parien. Translated by Frederick Hendriks [viii. 205].

1860.—*Notes on the Early History of Tonkines* [x. 205].

He has also read before the Statistical So. of London the following papers, which will be found in the Journal of that So.:

1856.—*On the Financial Statistics of British Gov. Life Annu.* 1808-55 ; and *on the Loss Sustained by Gov. in Granting Annu.* [vol. xix. pp. 325].

1860.—*Review of the Statistics of Spain down to 1857 and 1858, chiefly founded on the Spanish Census Returns of those Years* [xxiii. 147].

„ *Memorandum on the Pop. Statistics of Spain in 1858 and 1859 (in continuation of the Review of its Statistics)* [xxiii. 475].

1862.—*On the Vital Statistics of Sweden, from 1749 to 1855* [xxv. 111].

1863.—*On the Progress of Official Statistics in the Netherlands, 1858-63, with a new Dutch Life Table*, by Dr. von Baumhaur [xxvi. 420].

Some of the preceding papers are of marked ability and utility. Mr. Hendriks has written upon many subjects which do not fall within the range of our present purposes.

HENDRY, WILLIAM.—Pub. in Hull in 1820: *The Method of Calculating the Values of Life Annu., Assu., Fines Payable on the Renewing of Leases, etc., for Terms of Years Certain, and for Lives, with a large Collection of T., comprising some on Three Lives, never before published ; the whole illustrated by Useful Examples. Together with an Appendix, containing a T. of the Duties on Legacies, etc., granted by Stat. 55 Geo. III. cap. 184, and T. of the Values of Life Annu., by Stat. 36 Geo. III. cap. 52.*

A 2nd edition was pub. in 1825.

HENNIKER, SIR BRYDGES P., Bart.—Was appointed Registrar-General for E. & W. in 1879, in succession to Major Graham, who had held the position for many years. The appointment was not regarded favourably at first ; but those who have had opportunities of personally judging are satisfied that the interests of the department will not suffer by the change. We trust this may be the result. The present work embodies the results of the Ann. Reports of the Regis.-Gen. under many heads ; they are indeed continuously referred to.

HENRY, ARTHUR W.—Became Resident Sec. of Manchester branch of *Scottish Provincial* in 1874. He had previously been for many years in the head office of *London and Lancashire Life*.

HENRY, JARDINE.—Of Edinburgh, a most indefatigable computer, as will be seen by the following enumeration of his works.

1842.—He pub. anon: *The Hand-Book of Life Assurers: being a Popular Guide to the Knowledge of the System of Life Assu.; with an Exposition of its Advantages, and of its Useful Application to the Different Classes of the Community; together with an Explanation of the Various Modes of Doing Bus.; also a General Directory of Ins. Cos. in Gt.*

Brit. and Ireland, with their Capitals, Rates, and other Particulars. 12mo. pp. 163. A very useful little work, a small portion of which was contributed by the late Mr. W. Bridges.

1859.—*The Gov. Annu. T., embracing the Values of Annu. on Single and Two Joint Lives, at 3, 4, 5, and 6 p.c. p.a., for every combination of Age and Sex; founded upon the Actual Experience of the British Gov. Tontines and Life Annu., according to the Orig. Obs. of the Mort. of all the Nominees, from July, 1693, to October, 1825, as contained in the Rep. of John Finlaison, Actuary of the National Debt, and ordered by the Ho. of Commons to be printed 31st March, 1829.* 2 vols. 8vo.

An explanatory preface introduces the tables, which comprise all ages from 1 to 95 years, and are printed on paper of four different colours or tints, corresponding to the four different rates of int., to wit: 1° red, 3 p.c.; 2° green, 4 p.c.; 3° blue, 5 p.c.; 4° yellow, 6 p.c.; and concluded by an appendix on white paper, giving the values of Life Annu. from birth or age o.

A French ed. of this work has been pub. under the title of: *Tables de Rentes Viagères du Gouvernement Britannique, dressées par M. Henry, etc.*

We have noticed this work under title GOV. LIFE ANNUITANTS, date 1859, and draw attention to the concluding remark in that notice.

1861.—*Letter on Rep. of Mr. Finlaison on Gov. Annuitants in 1860;* the substance of which has already been given in the art. last named.

1863.—Mr. Henry read before the Inst. of Actuaries a paper: *On the Relation of the Carlisle Table to the Gov. and Regis.-Gen. and other Tables of Mort.,* and an abstract of the same is given in the *Assu. Mag.* (vol. xi. p. 89).

1866.—Vol. i. of *The Gov. Life Annu. Commutation T. for Single and Two Joint Lives, at 0, 1, 2, 2½, 3, 3½, 4, 5, 6, 7, 8, 9, and 10 p.c. p.a., and for Three and Four Lives at 3 and 6 p.c. p.a.; founded on the Actual Experience of the whole Tontines and Life Annu. of the British Gov. up to 1823, and corroborated by the further Experience of the same from 1823 to 1853; with T. showing on Inspection the Ann. Premis. for an Assu. of £100, by the above or any other T., for Single, Two, Three, and Four Joint Lives, at 3 p.c., and also at all other Rates on Addition of Constants.* To be completed in 8 vols. Pub. price £12 12s.

This work supplements the work of 1859, by supplying the requisite commutation columns for the calculation of annu. at the several per-centages named.

Vol. ii. (part 1), with a slightly altered title, was pub. in 1873.

1867.—He read before the Inst. of Actuaries: *Memoir of an Instrument for Furnishing the Numbers to Four Figures each in Two Joint Life Annuity Tables, on any basis.* And the same is printed in the *Assu. Mag.* (vol. xiv. p. 212).

The latest work announced is: *The Gov. Annu. T., embracing the Values of Annu. on Single and Two Joint Lives, at 3, 4, 5, and 6 p.c. p.a., for every combined Age and Sex; founded on the whole Obs. of the Gov. Annu. and Tontine Nominees from 1693 to 1829; and Life Annu. Commutation T., for Single Lives, at 0, 1, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6, 7, 8, 9, and 10 p.c. p.a., for Two Joint Lives at 0, 3, 3½, 4, 4½, 5, 5½, and 6 p.c. p.a., and Three and Four Joint Lives, at 3 and 6 p.c. p.a. for every combined Age and Sex.* The whole to be pub. in 6 vols. £16 16s.

Some of the preceding titles are slightly condensed. We wish Mr. Henry long life to complete his labours, with which indeed he is well forward.

HENRY, WILLIAM.—Was Sec. of *Widows and General* of Dublin for many years down to 1857.

HENWOOD, EDWARD.—Was for some years agent in London for the *Yorkshire Ins. Co.*

HEPATITIS.—A species of Liver Disease (Class, LOCAL; Order, *Diseases of Digestive Organs*).—The deaths from this cause in England show some little fluctuation. In 10 consecutive years they were as follows: 1858, 1353; 1859, 1488; 1860, 1329; 1861, 1386; 1862, 1262; 1863, 1402; 1864, 1429; 1865, 1474; 1866, 1401; 1867, 1319; thus varying from 70 p. million of the pop. living in 1858, to 63 in 1862, 71 in 1865, and 62 in 1867. Over a period of 15 years ending 1864 the deaths averaged about 75 to each million of the pop. The deaths in 1867 were: males 673; females 646. They increase steadily from the early ages up to 70; and then rapidly decline.

In 1868 the deaths were 1349; 1869, 1314; 1870, 1343. [LIVER, DISEASES OF THE.] **HEPPEL, GEO. HASTINGS.**—Was for several years Actuary to the *Standard of England Life*. But his name will be best remembered in connexion with a series of T. of Logarithms he calculated, but which were never pub.—he having died (in 1845) while the work was in process of printing—*Assu. Mag.* vol. x. p. 82. [LOGARITHMS.]

HERALD LIFE ASSU. SO. [No. 1].—This Co. was projected in 1851, but did not get beyond prov. regis.

HERALD LIFE [No. 2].—This Co. was projected in 1854, but no further steps were then taken. Whether the Co. which followed two years later was the outcome of this or the preceding project does not appear.

HERALD LIFE ASSU. SO. [No. 3].—Founded in 1856, with an authorized cap. of £100,000, in 10,000 shares of £10 (power to increase to one million), for carrying on the bus. of Life and Casualty Assu., Annu., Endow., Investments, and Loans. The Man. was Mr.

J. G. Cane. After carrying on bus. a year or two, the Co. either quietly passed out of existence or became merged in *Herald* No. 4.

HERALD LIFE INS. Co. [No. 4].—Founded in 1858, with an authorized cap of £100,000 in 10,000 shares of £10, for the purpose of carrying on "every kind of Life Assu. and Annu. bus.; but more particularly for carrying out the following new features and improvements:" 1. Granting whole-world indisputable pol. Then the following:

2. Medical examination and appearance dispensed with in cases *where individuals feel strong objections to, and apprehensions of, the ordeal*; and where pol. are required for proper and legitimate purposes, by third parties, on the lives of the persons, who, if they do not object to undergo the usual medical examination, nevertheless will not facilitate ins. on their lives.

3. The granting of annu. on more equitable terms than has heretofore been practised, *by allowing increased annu. to persons whose constitutions and general health are under the average.*

The founder of the Co. was Mr. T. A. Pott. In 1860 it passed into winding up in the Court of Chancery.

HERALDIC MOTTOES OF INS. ASSO.—It would be an interesting inquiry to ascertain which of the existing Ins. Cos. are entitled to Armorial Bearings, *i.e.* such Arms as have been bestowed by Charter or special grant, and are duly recorded at the Herald's College. The *Royal Exchange Corp.* is in this position. Its heraldic motto is "Trade and Navigation." A collection of the "Common Seals" of Ins. Asso. would be a step in this direction.

HERBALISTS.—Those who believe in the medicinal efficacy of herbs, and reject all other remedies. They have become dignified into a sect: they abandon the use of the lancet, mercury and all minerals, and most violent drugs and chemical preparations, and rely upon roots and herbs, which instinct and intuition may have selected and experience has shown to be useful. There is no doubt that the juices of plants, as well as those of many fruits, have mildly stimulating, cleansing, and tonic properties, useful in many diseased conditions. *Vide* Nichol's *Human Physiology*.

HERBERT, ROBERT.—Read before the Brit. Asso. (Bath meeting) 1864: *Statistics of Live Stock in the U.K.* 1853—63 [Jour. Statis. So. xxvii. p. 520]. [CATTLE.] [FOOD.]

HERCULES INS. Co. [No. 1].—Founded in Edinburgh in 1809, as a proprietary Co., with a cap. of £750,000. The bus. orig. embraced Fire and Life, but as to the latter branch, we learn from the Address of Mr. M'Kean, Man. of *S. Widows Fund*, before the Court of that So. in 1829, the following facts:

In the year 1809 . . . an attempt was made by a most respectable inst. in Edinburgh, the *Hercules* office, to commence the bus. of Life Assu. on an independent footing. Its proposals were accordingly pub. and circulated, and bus. actually commenced. But, discouraged by the slow progress of its operations, the bus. of Life Assu. was speedily abandoned, and confined to that of Ins. against Fire. . . . The failure of this attempt in 1809 appeared to indicate that Scotland was not yet ready for a National Life Assu. Inst. on an independent footing, and the field therefore was again left to the unobstructed operation of English activity. . . . [SCOTLAND, *Life Ins.*]

As to Fire Tax, the Co. in 1836 stood third in the list of Scotch offices in amount of Duty collected—the amount for that year being £5627. In 1846 it stood No. 6 in the list. In 1849 its bus. was trans. to the *S. Union*.

HERCULES FIRE AND LIFE ASSU. Co. [No. 2].—A Co. under this title was projected in England in 1853, but did not go forward.

HERCULES LIFE ASSU. Co. [No. 3].—A Co. under this title was prov. regis. in March, 1855, but proceeded no further.

HERCULES FIRE AND LIFE INS. Co. [No. 4].—Founded as a limited liability Co. in 1863, with an authorized cap. of £100,000, in 50,000 shares of £2 (power to increase to one million). The bus. of the Co. was very small, and in 1865 the Fire branch was trans. to the *Non-Tariff Ins. Co.*—only, however, to be re-trans. to another *Hercules* two years later.

The founder of the Co. was Mr. Samuel J. Shrubbs, who became its Gen. Man. **HERCULES INS. Co. LIM.** [No. 5].—Founded in 1865, for the purpose of taking over the bus. of the *Non-Tariff Ins. Co.*, which had taken over the Fire bus. of the *Hercules* No. 4, during the same year; and of the Life Ins. of the *Hercules* No. 4.

The authorized cap. of this (No. 5) Co. was £500,000, in 50,000 shares of £10—first issue 25,000 shares (power to increase to one million).

This was, in fact, a reconstruction of *Hercules* No. 4; for which the stock-holders in that Co. were paid by the issue of 2000 fully paid-up shares in this Co. Mr. Shrubbs was the Manager of this new or reconstructed enterprise.

In 1866 the Co. commenced underwriting Marine Risks, and increased its cap. for the purpose. This branch was discontinued in 1868, after the loss of a considerable portion of its cap. The Co. was in truth one of the victims of the gang which made fraudulent Marine Ins. a most lucrative branch of bus.—but became itself broken up a few years later.

In this same year (1868) the Co. took over the bus. of the *International Life*, and although in so doing it was to receive assets to the extent of £150,000, and did actually receive £105,000 odd, it also received its death-blow in the process. The Co. was not then strong enough to grapple with such an enterprise.

Early in 1869 the Life bus. of this *Hercules*, together with that of the *International*, was united with the *Prudential*; and the Fire bus. with the *London and Southwark*.

The next step was a scramble amongst the lawyers for the liquidation of the Co.—no less than 5 petitions being presented for this purpose: several of them, it was understood, at the instance of those who had been conspicuous in their raids upon its Marine branch, but who had not succeeded to the full extent of their designs before the crash came. It was agreed in the first instance that there should be a voluntary winding up; but shortly afterwards an order was made to bring the liq. under the supervision of the Court—Mr. W. J. White being appointed Liquidator.

The next event of importance was the offer of a reward for the apprehension of the General Manager.

As a further item in the way of litigation, the Chairman and Directors were in May, 1869, summoned to the Mansion House on the alleged ground of fraud, at the instance of certain shareholders, it was said; but it was prob. only an attempt at coercion. At the last moment it was stated that civil and not legal proceedings would be taken, and the charge, such as it was, was withdrawn. The Lord Mayor said he had no doubt the prosecutors had exercised a wise discretion in taking civil instead of criminal proceedings, *which latter ought never to be adopted without a clear case, and this court ought never to be used for any but its legitimate purposes.* There being no evidence, the prosecution was withdrawn. At the same time, it was a matter for regret that the names of respectable parties should be brought into connexion with a criminal court. That must be painful to them, and if he had had an impression that it was not the intention of the prosecution to proceed, no summonses would have been issued. Mr. Lewis reminded the Lord Mayor that he had issued a warrant against Mr. Shrubbs, the Manager of the Co., and that a reward had been offered for his apprehension. The Chairman, Mr. John Everitt, did not appear, being, it was stated, in America.

The next stage of the bus. was the ordinary one (in compulsory liquidation) of the Liquidator looking into the various contracts made, in view of challenging or repudiating all those that would not stand the light of *ex post facto* criticism; and in this instance he had not far to look. He challenged (*inter alia*) the amalg. agreement between the *Hercules* and the *International*. The tone in which the resulting correspondence was conducted may be judged of by the following passages from a letter of the Liquidator addressed to the *Ins. Record* in Aug. 1869:

If I understand rightly the functions of an actuary, they are limited to a valuation of assets and liabilities, or, perhaps, to speak more exactly, a calculation of future sources of income and outlay; and I do not think that Mr. Woolhouse was called upon to estimate what might have been "accomplished under new auspices" or to estimate the price of "vigorous management"; and assuming any hypothetical value that he may please as the fair probabilities of these things, which he denominates, actuarially, as "new auspices," and "vigorous management," they were, I apprehend, the property of the *Hercules* and not of the *International*.

As Mr. Woolhouse invites inquiry and challenges opinion on the matter, some shareholders of the *Hercules* will, I fear, be anxious to know what assurances could have warranted that gentleman in supposing that he was justified in so wide a departure from the rules of actuarial valuation as to advise the *Hercules* to buy a decaying life assu. bus. at a valuation of 5 p.c. on its future income, and to value not only the net prem., but also the loading or profit margin.

As a matter of fairness to Mr. Woolhouse, I do however take cognizance of and attach some importance to his statement that he was at all events not informed that Mr. Sheridan was to receive £8000 as the reward of his negotiation, and that Mr. Richardson was to receive the sum of £15,000; but let me add that my report does not ascribe to him that knowledge.

I cannot alter my report, as Mr. Woolhouse desires, about the correspondence as to the basis of the valuations, because that correspondence began with him through Mr. Shrubbs; and the difficulty we had in ascertaining the basis of the valuation between the *International* and the *Hercules* taxed the patience of the members of the Committee of Consultation very seriously before either I or the solicitor entered into any direct communication with our late Actuary.

My desire to avoid a personal controversy must also be taken as an excuse for not offering any opinion as to Mr. Woolhouse's views of the "equity of the basis specifically prescribed in the articles of agreement for transfer to the *Prudential*." It is true that Messrs. Sprague and Bailey were bound to act upon the basis referred to: but I have reason to know that both those gentlemen consider the terms at least as favourable to the *Hercules* as any we could hope to have obtained through any solvent office; and you, Mr. Editor, will have observed that Mr. Robert Tucker, the Actuary to the *Felician* Life Office, among others, differs also from Mr. Woolhouse in this matter.

Some of the points here raised will have to be again referred to in our hist. of the *International Life*.

Then followed the usual efforts of shareholders seeking to escape the horrors of the winding-up. These arose in applications to the court to vary the register. The facts in the case of *Lowe* and *Strange* will be gathered sufficiently from the following summing up of V.C. Malins:

It was true that the Directors had power to exercise a discretion in sanctioning transfers, but this must be carried out in a reasonable manner, and if they had any objection to offer, it should be stated at once. No objection was ever raised to Mr. Strange being registered in the place of Mr. Lowe, and it was not on that ground that the regis. was not sanctioned. The next Board meeting (after the transfer was left at the office) was on the 6th January, and if the winding-up of the Co. had been decided upon before that day, there might have been a good reason for not regis. the transfer, but the resolution for winding-up was not passed till the 18th Jan., and the order was not made till the 3rd Feb., which was a month after the transfer was left at the office, and even on the 13th the Man. wrote to Mr. Lowe telling him that petitions for winding-up were

presented by a hungry pack of lawyers, evidently wishing to infer (what he knew to be incorrect) that there was no intention of winding-up the Co. The question now was, who should be on the register? It was contended that Mr. Colbeck's name should be put on, but Mr. Lowe had nothing to do with Mr. Colbeck. There was no privity between them. Mr. Lowe sold his shares to Strange, and it was the duty of the Directors to register that transfer, and he should now order that the registry should be rectified, and Mr. Strange's name be placed on the list for the 50 shares in the place of Mr. Lowe's name. (Jan. 1870.)

In *How's* case (July, 1870) the question, which came by way of appeal from a decision of Vice-Chancellor Malins, was whether a Mr. How was to be included in the list of contributories of this Co. for 150 shares. In June, 1866, Mr. How, at the suggestion of Mr. Everitt, the Chairman of the Co., who was his brother-in-law, applied for the shares, and, instead of paying £300, the sum due on the allotment, he gave the Co. his promissory note for that amount, and deposited the certificates of the shares with the Co. as security. In Nov. 1867, he transferred the shares, with the consent of the Directors, to one John Raban, a man of no property, who was in receipt of weekly wages, and Raban gave the Co. a promissory note for the £300. How's note, however, remained with the Co., and they afterwards sued him upon it and recovered a verdict. The Vice-Chancellor held that the transfer was a merely a colourable one, and that Mr. How must be on the list of contributories. From this order Mr. How appealed. Lord Justice James was of opinion that everything connected with this transfer was a mere sham, and that the trans. could not stand. Mr. How never really sold the shares when he trans. them to this man, who was in receipt of 7s. a week, nor did Raban ever intend to become the owner of the shares. How took the shares to oblige Mr. Everitt, his brother-in-law, and when How got tired of them Everitt found a pauper to sign a promissory note for the £300, and to accept a transfer of the shares. The whole thing was a mere sham, and could not stand for a moment. The appeal must be dismissed.

In 1874 *Brunton's* case arose on the following facts: Mr. John Sheridan was employed by the Directors of the *Hercules* to carry out the negotiations with the *International Life*. For his services he was to receive the sum of £8000, £2000 in cash and £6000 in bonds. The bonds given to Mr. Sheridan were for £250 each, and bore the date of May 23, 1868, and by each of them the Co. was bound to Mr. Sheridan in the penal sum of £500, the condition being that if the *Hercules* Co. should pay to Mr. Sheridan, his executors, administrators, or assigns, on Nov. 15, 1869, the sum of £250, the bond should be void, with a proviso that that sum was to be charged upon and payable out of all the property of the Co. wherever situate, including the uncalled up cap. for the time being. In the autumn of 1868, Mr. Shrubbs, who was the Sec. of the *Hercules* Co., was indebted to the present claimant, Mr. Brunton, and being liable to have execution issued against him, he procured an assignment to be made by Sheridan of one of his bonds to Brunton; and a formal assignment was accordingly made on Dec. 7, 1868. It did not appear that Brunton made any inquiry at the office of the Co. with regard to the bond; but five days after the assignment, Brunton's solicitor gave formal notice of the assignment at the office of the Co., and the officers of the Co. stamped the duplicate notice with the seal of the Co. as an acknowledgment that they had received it, although they did not register the assignment in the books of the Co., as it was their duty to have done. In the month of Jan. following, a resolution for a voluntary winding-up was passed by the Co., and in Feb. 1869, an order was made that the winding-up should be continued under the supervision of the Court. This winding-up was now practically accomplished, one of the only remaining questions being as to the validity of the bonds given to Mr. Sheridan when, as in the present instance, they had passed into the hands of an assignee for value, and this was chosen as a representative case. V. C. Malins, in delivering judgment, said: It was not in the real interest of public cos. that persons taking securities such as these should be bound to make all sorts of inquiries whether their original issue was *ultra vires* or not, and so on, and the result of a decision in favour of this Co. would have the prejudicial effect of making all this class of securities unmarketable. Mr. Brunton, as the holder of this bond for a valuable consideration, was an innocent party, and though the shareholders were innocent parties also, yet between the two, it was surely more just that they who had selected inefficient officers should rather be the sufferers. Therefore, in the view that the Co. had represented those bonds which were assignable in equity to be due from them, or had so conducted themselves by affixing their seal on the notice as to make their conduct equivalent to such a representation, they could not now dispute the bond.

The liq. has been a most cruel one for the contributories; but the legal difficulties must have been very great. It was in 1878 complained that no bal.-sheet had been submitted to the contributories during the entire progress of the liq. During this year Mr. White was permitted to retire from the post of liq. on the ground of ill-health; and he soon afterwards died. Mr. James C. Benwell was appointed his successor. Dividends have been declared to the extent of 16s. in the £, with some prospect of a further payment. It will be instructive to know the entire costs of the proceeding.

Altogether the career of this Co. is one of the most remarkable of modern times, and hence the full details furnished.

HEREDITAMENTS.—Every kind of property that can be inherited : *i.e.* not only property which a person has by descent from his ancestors, but also that which he has by purchase, because his heir can inherit it from him. The two kinds of hereditaments are *corporeal*, that is tangible, the same as land ; *incorporeal*, which are not tangible, and are the rights and profits annexed to or issuing out of land, as tithes, advowsons, franchises, etc., etc.

The term hereditaments applies both to realty and personalty, but in a different mode of relation : when applied to the former, it denotes the *subject* of property, apart from its nature and extent ; when to the latter, it signifies some inheritable right of which the subject is susceptible. It is also used in a third sense to denote inheritable rights relating to land, or something issuing therefrom or exercisable therein ; or having some local connexion or relation distinct from the enjoyment of the land itself.

Thus hereditaments divide themselves into real, personal, and mixed, and become applicable to all kinds of property—*Wharton*.

HEREDITARY.—Descended by inheritance, or from an ancestor, as hereditary estate. Capable of descending from an ancestor to an heir ; descendible to an heir-at-law. Transmitted or capable of being transmitted from a parent to a child. [HEIR.]

HEREDITARY CO., FOR THE BENEFIT OF THE PRESENT AND SUCCEEDING GENERATIONS.—An Asso. under this title was projected in Lond. in 1712 : the articles of its proposed constitution being issued on the 18th Dec. in that year. Short title : *Hereditary Co. on Lives*. It was based very much upon the plan of the *Amicable So.*, viz. that of an ann. distribution of certain funds among the nominees of the deceased members. A detailed account of the Co. will be given in our HIST. OF LIFE INS., this date.

HEREDITARY DISEASES.—A term applied to diseases supposed to be transmitted from parents to their children ; and such transmission is said to be due to *hereditary predisposition*. In extreme cases, in which all or several children exhibit a special liability to certain diseases, this liability is referred to family constitution. [ATAVISM, Supp.]

These have been already considered from different aspects in different parts of this work—see FAMILY HIST. ; also DISEASES, HEREDITARY, TRANSMISSION OF ; and GOUT. But more remains to be said. Hippocrates evidently entertained a strong opinion as to the importance of hereditary influence. In his essay on the “Sacred disease” (termed by us epilepsy) he says :

Its origin is hereditary like that of other diseases. For if a phlegmatic person be born of a phlegmatic, and a bilious of a bilious, and a phthisical of a phthisical, and one having spleen disease of another having disease of the spleen, what is to hinder it from happening, that when the father and mother are subject to this disease, certain of their offspring should be so affected also ? As the semen comes from all parts of the body, healthy particles will come from healthy parts, and unhealthy from unhealthy parts.

This was a practical way of looking at the question.

1860.—Mr. H. W. Porter, B.A., read before the Inst. of Act. a paper : *On some Considerations suggested by the Ann. Rep. of the Reg.-Gen., being an Inquiry into the Question as to how far the Inordinate Mort. in this Country exhibited by those Reports is controllable by Human Agency*, wherein he discussed with ability the subject of the hereditary transmission of phthisis. [CONSUMPTION.]

1861.—Dr. Brinton, M.D., in his treatise, *On the Medical Selection of Lives for Assu.* (3rd ed. p. 22), after some general obs. on family hist. already quoted [FAMILY HIST.], continues :

But it is obvious that the influence of an hereditary tendency to any such disease on the prospective duration of life, must depend (1) on the danger to life which the particular disease involves ; and (2) on the degree on which its transmitted or congenital liability exceeds that risk which every individual runs of acquiring it. And the difficulty of exactly estimating these two points generally reduces our knowledge to little more than conjectures : which, however, have their great practical value, but have little scientific accuracy.

1865.—Mr. John Mann, in his *Medical Statistics of Life Assu.*, after discussing some of the topics which we have already noticed under title FAMILY HIST., proceeds (p. 87) :

But when we have arrived at this general conclusion of the importance of considering the hereditary element, another question arises as to the degree of importance which should apply to the case under consideration, *according to the similarity of sex*. In other words, when the diseased parent is the father, are the sons more likely than the daughters to be attacked ? *Vice versa*, the same question applies to the mother.

The reply to these questions finds a solution in the Rep. of the Brompton Hospital for Consumption, 1849, wherein is given the following T. :

T. showing the Proportion of Consumptive Sons and Daughters to Consumptive Fathers and Mothers respectively :

Sex of Patients.	No. of Cases.	Father Consumptive.	Per Cent.	Mother Consumptive.	Per Cent.
Sons	106	63	59·4	43	40·6
Daughters	108	47	43·5	61	56·5

Both father and mother were consumptive in the case of 12 males and 10 females. The brothers and sisters in add. to father and mother were consumptive in 4 males and 6

females. The results are remarkable: the father transmits consumptive disease to the sons in 59·4 p.c., to the daughters in only 43·5 p.c. The mother to the sons in 40·6 p.c., but to the daughters in 56·5 p.c. Thus the chances are not far from twice as great in the case of either parent, that the hereditary tendency will descend in the same sex as that of the diseased parent as that it will descend to the other sex.

Nor are these results confined to England. In a Table prepared from a Rep. of the New York State Lunatic Asylum (date not stated) a like test was applied as to Insanity:

T. showing the Proportion of Insane Sons and Daughters to Insane Fathers and Mothers respectively—New York State.

Sex.	Number of Cases.	Father Insane.	Per Cent.	Mother Insane.	Per Cent.
Sons	117	64	54·6	53	45·3
Daughters.....	147	67	45·4	80	54·4

Both parents were insane in the cases of 4 males and 5 females.

These T. (says Mr. Mann) are very interesting, as they point to the existence of a law whereby disease, in its transmission from one generation, is influenced by sex, and they give some notion of the degree in which this influence is practically realized. "We are at present speaking of the Laws of Heredity in relation to Life Assu.: but it is obvious that, considered in reference to marriage, and the formation of some other social contracts, it is hardly possible to rate too highly their importance, as affecting not one life only, but it may be, beclouding the future of successive generations" (p. 89).

1868.—Dr. W. A. Guy, M.B., F.R.S., in his *Principles of Forensic Medicine* (p. 139), says, in speaking of Family Hist.:

As a general rule it will not be necessary to extend the inquiry beyond the father and mother, and the brothers and sisters, if the answers regarding them prove favourable; but if these near relations have died early, or if they appear to be subject to some hereditary malady seriously affecting the duration of life, it may be necessary to include in the inquiry a larger circle of relationship.

1874.—Dr. Sieveking, M.D., in his well-written work, *The Medical Adviser in Life Assu.*, says (p. 21):

For the purposes of Life Ins. it is necessary to determine the existence and the character of hereditary influence from three aspects. The evidence obtainable may be derived from preceding generations, from collaterals, and from descendants. It has been too much the custom to pay regard only to the vital power of progenitors; but important as this point is, we shall find, when discussing special morbid taints, that the health of collaterals offers very valuable indications as to the health of an insuree, which are not offered or not accessible when the former alone is examined. The condition of descendants, in the nature of things, does not so frequently assist in determining the health of their predecessors, because, though theoretically of similar import, the age of assurers generally militates against this element becoming an item in the calculation of their vital power. Apart from the actual health of the progenitors, physiological conditions come into play, that frequently determine the variability of their offspring, some of which at least are readily ascertainable. To these belong the relative ages of the parents at the time of insuree's birth. Great disparity of age is justly regarded as exercising a prejudicial influence, even though other points are favourable. Blood relationship again, which in this country is not a bar to marriage in degrees that physiologically are objectionable, leads to the production of sickly offspring which may not at the time of ins. have exhibited any failure of power, but which nevertheless would be less capable of resisting morbid influences to which they must sooner or later be subjected. It is this power of resisting disease, the *vis insita*, to which in all cases the medical referee's attention requires to be specially directed. The actual malady or morbid taint is comparatively easy of detection, but the gauge that is to test the insuree lies in the means of estimating his ability to undergo the heat and burden of active life, and to ward off or bear with impunity the noxious influences which he cannot altogether escape.

Again (p. 68):

The question presents itself to us under two aspects, which we would consider as direct and as indirect hereditaryness. The former implies the conveyance of a definite morbid taint from one generation to another; under the latter we understand the production of constitutional peculiarities not traceable to actual disease, but due to accidental circumstances affecting the embryonic condition of the individual, and influencing his future development. Many of the data are extremely difficult to obtain; and fortunately for mankind it is also true that education and training may neutralize and divert the morbid impulse imparted to offspring; but the more the physician inquires into the private history of families, the more ground will he discover for his belief in the doctrine of hereditary influence. As yet, our knowledge on the subject is but very fragmentary, but is one that largely concerns the schoolmaster, the political economist, and the philanthropist, as well as the physician; and it is to be desired that some Hercules in science may arise before long, not only able to gather up all the disjecta membra, but also to give shape and precision to many views that still possess no firmer basis than that of vague hypothesis.

And finally (p. 84):

The hereditary taint shows itself in a marked manner in the various diseases referable to the nerve-centres, but more in those which are connected with the brain than with the spinal cord. They are, however, with certain exceptions, chiefly the appanage of advanced life, and do not affect life ins. by any means in the same ratio as diseases of the thoracic and abdominal viscera. Thus apoplexy is most common between 60 and 70. . . .

The hereditary taint often shows itself in the reproduction of brain disease of a different form from that in which it appeared in the ancestors—a marked correlation existing between apoplexy and its ally paralysis, epilepsy, hysteria, asthma and insanity. Epilepsy, which unfortunately occurs most frequently in early life, exhibits in a marked form the hereditary impress, as well as this correlation; though, like most other diseases, it may arise spontaneously from purely idiopathic causes. Insanity, again, belongs, to the morbid conditions in which the hereditary influence is strongly marked, though it does not appear largely to affect life ins. bus. Drs. Bucknill and Tuke tell us that, though acute insanity shortens life materially, the chronic form does not exhibit that tendency.

B. G. M. B.

THE INSURANCE CYCLOPÆDIA:

A DICTIONARY

OF THE DEFINITION OF TERMS USED IN CONNECTION WITH THE THEORY
AND PRACTICE OF INSURANCE IN ALL ITS BRANCHES.

A BIOGRAPHICAL SUMMARY

OF THE LIVES OF ALL THOSE WHO HAVE CONTRIBUTED TO THE
DEVELOPMENT AND IMPROVEMENT OF THE THEORY AND PRACTICE
OF INSURANCE: WHETHER AS AUTHOR, MANAGER, ACTUARY,
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OF ALL WORKS WRITTEN UPON THE SUBJECT OF INSURANCE AND ITS
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